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[OFFICIAL NOTICE.]

Detroit Meeting, American Gas Institute.

HEADQUARTERS, AMERICAN GAS INSTITUTE,
25 West 39th street, New York, Sept. 23d, 1909.

The following preliminary outline of the plans underway for the Detroit meeting of the American Gas Institute, to be held in that city, October 20, 21 and 22, may be of interest. The Committee of Arrangements, as appointed by President Prichard, was made up as follows: Irvin Butterworth, Chairman; J. T. Lynn, J. J. Knight, B. O. Tippy, W. T. Barbour, W. S. Blauvelt.

With the approval of the President, Mr. Butterworth has added to the list a number of men prominent in the gas industry. The Sub-Committees are now arranged as follows:

Ways and Means Committee.—James T. Lynn, Chairman; W. T. Barbour, Geo. H. Barbour, James W. Dwyer, John J. Knight, Frank Hulswit, Lazard Kahn, D. J. Collins, J. N. Williamson.

Smoker.—Jules G. Hoffman, Chairman; Alonzo P. Ewing, A. L. Zwisler, F. P. Mueller, Ed. Leaky.

Boat Trip.—V. F. Dewey, Chairman; W. S. Blauvelt, Jas. Foley, Roy Shacklette.

Entertainment of Ladies.—H. L. Olds, Chairman; W. G. Henry, W. R. Vanvalkenburg, Andrew H. Green, Jr., Samuel T. Douglas, W. E. Moss, B. O. Tippy, Stanhope Boal, W. C. Kennedy, George D. Roper, George M. Clark, Charles H. Dickey, A. T. Knowlson.

Hotels, Hall and Information.—E. F. Lloyd, Chairman; George Osius, Edward M. Mabcourt, G. O. Ciliax.

The Committee has decided to arrange for an informal "Smoker" at the Wayne Pavilion, instead of a banquet. There will be a theater party, luncheon at the Country Club and trips about the city for the ladies. A steamboat trip to Lake St. Clair, down the river to Bois Blanc, including an inspection of the very interesting engineering work at the new channel, and a visit to the Solvay Process plant, will be features. The headquarters will be at the Pontchartrain, and the meetings will be held at Elks' Hall, only a block distant.

Mr. R. B. Brown, Chairman of the Technical Committee, advises that about 16 papers are being prepared, and that Dr. Hyde has consented to give a lecture on "Illuminating Engineering."

There will be three good papers on commercial subjects, one on "Accounting," one on "Illuminating Engineering in Practical Applications," and a first-class technical and general programme.

The reports from the "Wrinkle Department," "Bureau of Information," and the various committees, will contain matter of unusual interest.

HOTEL ACCOMMODATIONS.

The following hotel information is presented for your consideration:

Hotel Pontchartrain—European Plan.—Rooms with hot and cold running water, 1 person in room, $2 to $2.50 per day. Room with hot and cold running water, 2 persons in room, $3 to $4 per day; room with bath, 1 person in room, $3, $3.50, $4, $5 per day; 2 persons, $5, $6, $7, $8 per day. This hotel will take care of about 250 people comfortably. They advise, however, that they have not very many single rooms, and it will be advisable for people desiring reservations to make them as quickly as possible. This hotel will be headquarters, and will be remembered by previous visitors to Detroit as on the site of the old Russell House. It is within sight of and about 2 minutes' walk from the Convention Hall. It is reached from all depots by any car at the depot without change.

Hotel Cadillac—European and American Plan.—Rooms without bath on the American plan $3.50 and $4 per day, each person; rooms with bath, $4, $5, $6, $7, $8 per day, each person. Rooms without bath, on the European plan, $2 to $2.50 per day, each person. Rooms with bath, $3, $3.50, $4, $5, $6 per day each person. They can accommodate 100 to 150 people. This hotel is located at the corner of Michigan avenue and Washington boulevard, and is 5 minutes' walk from the meeting hall, with a direct car line thereto. It is reached by car line from all depots, transferring at the City Hall to Michigan car. Transfer point is 3 blocks from hotel.

Wayne Hotel.—American Plan.—Without bath, $2.50 to $4 per day; with bath, $4.50 per day.

European Plan.—Room without bath, $1.50 to $2 per day; with bath, $2.50 to $3 per day. Two persons in one room, without bath, $2.50 to $3 per day; with bath, $4 to $4.50 per day.

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This hotel will be able to accomodate about 50 people, and is located across from the Michigan Central depot and overlooking the river. It is 7 minutes by direct car line to the meeting hall and about 15 or 20 minutes' walk. The "Smoker" for Thursday evening will be held in the pavillion annex of this hotel.

Hotel Tuller.—European Plan.—Every room with bath, 1 person in a room, $2 to $4; 2 persons in a room, $3 to $5. They can accommodate about 100 people. The hotel is located at the corner of Adams and Park, which is one block off Woodward, facing Grand Circus Park, and is about 5 minutes walk from the meeting hall. It is reached by Woodward car line from Michigan Central depot. From Lake Shore, Grand Trunk and Union depots by any car with transfer to Woodward.

Hotel Ste. Claire.—American Plan.—With bath for one, $3.50 and $4; two, $7 and $8. Without bath for one, $2.50 and $3; two, $5 and $6. This hotel will accommodate 50 or 60 people nicely. It is located at the head of Monroe avenue, in sight of and two minutes walk from the meeting hall. It is reached by all car lines from depots, transferring to Michigan car at City Hall. Transfer point is 3 blocks from hotel. Cars from Lake Shore depot pass hotel.

Griswold House.—European Plan.—Rooms, with running hot and cold water, $1 per day; rooms, with bath, $1.50 and $2 per day. Where more than one person occupies the same room, the rate for each additional person is $1 per day. The hotel is located at the corner of Grand River avenue and Griswold street, about 5 minutes walk from meeting hall. Is reached by Woodward cars from Michigan Central depot within one short block. Is reached from Union, Lake Shore and Grand Trunk depots by transfer to Jefferson cars, which pass the door.

Hotel Normandie.—European and American Plan.—European plan: $1, $1.50, $2 per day, without bath; $2, $2.50 per day, with bath. Where two or more occupy the same room, a reduction of 50 cents is made, except with the minimum rate. This hotel is located on Congress street, ¼ block east of Woodward, and in the same block as the Pontchartrain. Five minutes walk from meeting hall, and is reached direct by car line from all depots.

Hotel Metropole.—European Plan.[1]—Rooms, without bath, $1; with bath, $1.50. This hotel is located on Woodward avenue, alongside the Pontchartrain.

Oriental Hotel.—European Plan.[2]—$1 to $2 per day, *with free use* of the plunge and shower baths. This hotel also has Turkish and Russian bath house annex, and is located on Farrar street near Gratiot avenue, about 3 minutes' walk from the meeting hall. Is reached within 2 blocks by direct car line from any depot.

Detroit is particularly a Convention City, and a clearing point for tourists to all points north, as well as a gateway for tourists and commercial travel east and west, hence in the middle of October, if accommodations are not properly reserved, it may be difficult to get anything suitable or satisfactory. A. B. Beadle, Secretary.

BRIEFLY TOLD.

The Meeting of the American Gas Institute.—Everything is in readiness for the Detroit meeting of the Institute, and by the time this is in the hands of our subscribers several will be on their way to the appointed place. That the attendance will be a good one is assured, despite the fact that the railroads have refused to make any concession in fares whatever. The papers to be read are:

"The Developing of Oil Gas in California," by Mr. E. C. Jones.
"A Rapid Method for the Identification of Gas Oils," by Messrs. F. E. Park and L. E. Worthing.
"Gas in the Modern Kitchen," by Mr. Geo. W. Thomson.
"Power Plants for Works of Medium Size," by Mr. C. D. Robinson.
"A Pound of Coal:" A paper treating of the results thus far obtained in the new carbonizing house of the Worcester (Mass.) Gas Company, by Mr. Chas. D. Lamson.
"The Acceptance and Interpretation of Data," by Mr. R. O. Luquer.
"Sulphur Compounds of Illuminating Gas," by Mr. C. J. Ramsburg.
"Sliding Scale," by Mr. A. E. Forstall.
"Automatic Oiling Meters: Top Oilers," by Mr. T. D. Miller.
"Booster System," by Mr. Frank Hellen.
"The Solicitor," by Mr. Karl A. Schick.
"Blowers and Exhausters," by Mr. J. T. Wilkin.
"Experiences with Verticals at Manchester," by Mr. Rollin Norris.
"Use of Tar on Roads," by Mr. Arthur D. Little.
"Commercialism," by Mr. Chas. W. Cohn.

The representative business people of Richmond, Va., are extremely anxious to have the next Convention held there, and to that end have made positive advances to those who will have the say in the matter. That they are in earnest may be readily seen from the following despatches, just to hand before going to press:

Richmond, Va., Oct. 14, 1909.

American Gas Light Journal: Richmond extends a cordial invitation to the American Gas Institute to hold its convention next year here.—P. M. Fry, Chairman Convention Committee, Chamber Commerce.

1. Strictly "stag." 2. Strictly "stag."

Richmond, Va., Oct. 14, 1909.

American Gas Light Journal: I take this occasion to advise you that Richmond, Va., will extend a cordial invitation to the American Gas Institute to convene in Richmond in 1910. This invitation is offered with sincere hope for acceptance, and Richmond will be favorably represented on the occasion.—Richmond Chamber of Commerce.

These messages show that Richmond is in earnest over the problem. In every event the Detroit meeting bears all indications that it will be a banner one.

New York Section, Illuminating Engineering Society.—The opening meeting of the season of the New York Section of the Illuminating Engineering Society was held on Thursday last, at the Engineering Societies' Building, with a small but enthusiastic attendance. The meeting was held for the purpose of discussing the papers read at the recent convention.[1] The Chairman, Prof. E. L. Elliott, called upon Mr. H. Thurston Owens to abstract his paper on "The Progress of Illuminating Engineering in Europe."[2] The matter was discussed by Messrs. Lansingh and Rowe, and in reply Mr. Owens stated that high pressure gas was being gradually adopted for interior lighting, and called attention to the report of the London Committee who favored this luminant for the lighting of the city. Mr. Marshall then abstracted his paper on "Diffusing Mediums," and in the discussion Mr. Owens stated that the cold light of the inclosed arc lamp would probably be done away with by means of either magnetite or flaming arcs rather than a change in the glass. In discussing Dr. Bell's paper on "The Principles of Shades and Reflectors," Prof. Elliott called attention to the fallacy of putting fluting or ribs upon the surface of a reflector, owing to greater absorption than would be the case from a smooth surface. The paper which brought out the greatest discussion was that by Mr. A. J. Sweet, on "The Standard Relation of High Distribution," and the gist of the matter was that illuminating engineering was in need of more data which could be used by the layman.

CURRENT MENTION.—

Mr. J. McK. Reiley, of Harrisburg, Pa., has been appointed travelling salesman to cover the Eastern territory, by the New Method Company, of Mansfield, O., manufacturers of what the Company is pleased to call new method gas appliances. The main thing in stock is a gas range.

A correspondent in Tacoma, Wash., forwards the following: "I presume you have made mention of this in the Journal; but even so, a recounting of the same will do no harm. Just prior to his leaving for the East, to take up his present position of Chief Gas Engineer to Messrs. Edward M. Deane & Company, Mr. W. A. Aldrich, the retiring Manager of the Tacoma (Wash.) plant, was presented with a handsome silver loving cup, which had been subscribed for by 47 men of the Company's staff, running from General Office Manager to the stokers' helpers. This surely shows again that a manager's success depends as much, perhaps more, on the loyalty and respect of his subordinates than upon his own endeavors.—W."

This paragraph is from a correspondent in Pottstown, who writes under date of the 13th inst.: "Governor Stuart, of Pennsylvania, on the 1st inst., affixed his signature to a charter, issued to Messrs. H. G. Williams, W. L. Binder and Frederic Roech, under which they may operate a corporation known as the Pottstown Conduit Company. They applied for a franchise to the City Council some days later, which body immediately placed the measure in the order of second reading. It looks as though friend Williams was easily on the job; and that in time Pottstown's lighting troubles will be speedily at an end."

The annual meeting of the Massachusetts Gas Companies, through the reports read to the shareholders, shows that the Company enjoyed a fairly prosperous year. The total earnings showed a gain for the twelvemonth over its predecessor of $280,900, and the surplus account was increased in the sum of $19,000. The Directors named to succeed themselves for the ensuing year were, Messrs. Charles Francis Adams, 2d; W. C. Baylies, Samuel Carr, Joseph B. Russell and Robt. C. Pruyn.

The position of Engineer of Construction, an office which was recently created by the owners of the Providence (R. I.) Gas Company, and to fill which Mr. Carroll Miller, of Pittsburgh, Pa., was selected, is to be a permanent one instead of a temporary one. Mr. Miller was originally retained to oversee the details of construction of the new plant of the Providence Company that is being constructed at Sassafras Point. This will be especially welcome news for Capt. McKay, of the Boston Company, who certainly does like to break a lance with Mr. Miller.

Mr. C. J. Schwehn, in the employ of the Fort Wayne (Ind.) Gas Company for 20 years or more, during half of which period he was in charge of the Company's commercial department, has resigned from the service. His successor will likely be Mr. H. S. Elliot.

1. See Journal, *ante* pp. 821-867. 2. See Journal, p. 905.

The Progress of Illuminating Engineering in Europe.

[Presented at the Third Annual Convention of the Illuminating Engineering Society by MR. H. THURSTON OWENS.]

The subject of illuminating engineering has been considered by the lighting engineers of Europe ever since the movement began in this country over 3 years ago, but did not become prominent until "The London Illuminating Engineer" was started, January 1, 1908, by Mr. Leon Gaster, assisted by Mr. J. S. Dow.

The former had previously read two papers dealing with the subject which aroused considerable discussion, but the advent of the magazine proved that the subject was well worthy of attention, contributions from the foremost engineers, not only of England but of the Continent, rapidly dispelling any doubts to the contrary.

The Cantor Lectures.—By far the most significant event since the movement started was the fact that the privilege of delivering a series of the Cantor lectures, on "Modern Methods of Illumination," was conferred upon the Editor of "The Illuminating Engineer," Mr. Leon Gaster. These lectures are given before the Royal Society of Arts, now in its 155th year; and that subjects of importance have been selected may be judged by some of the recent ones: "Steam Turbines," by Mr. Gerald Storey; "Aerial Navigation," by Prof. Lanchester; "Wireless Telegraphy," by Prof. Fleming; "Arc Lamps," by Prof. Sylvanus Thompson, and "Gas and Acetylene," by Prof. Vivian B. Lewes.

The British Illuminating Engineering Society.—About the time the lectures were delivered a dinner was held by the chief supporters of the movement, and the British Illuminating Engineering Society was organized February 6, 1909.

This was a remarkably short space of time, considering the large number of societies which have found a home in London, and the general apathy toward innovations along these lines among the engineers and scientists of our mother country.

Among those in England who have become identified with the movement are: Sir Edward Brabrook, Prof. V. B. Lewes, Mr. W. J. A. Butterfield, Mr. C. W. Hastings, Mr. C. Carpenter, Mr. F. W. Goodenough, Mr. A. P. Trotter, Dr. C. V. Drysdale, Mr. W. H. Y. Webber, Dr. H. Parsons, Mr. J. Eck, Mr. H. T. Harrison, Mr. J. Darch, Mr. J. W. Ife. It is the intention of the Society to become international in character, and to work in harmony with this Society An important feature of the work undertaken is the large number of prominent men on the Continent and in America who have been elected corresponding members.

The Lighting Conditions.—The profession of Illuminating Engineering is still in its infancy abroad, just as it is with us, but the almost universal use of modern, high-powered luminants has made it evident that the sooner the services of impartial practitioners are obtained the greater will be the benefits for the greatest number. The science of lighting has been handled for a much longer period, and the lamps, which we term modern illuminants and have hardly tried, have become an old story with them.

To illustrate this more fully, let us consider the following: High pressure, upright gas lamps were installed for public lighting in Berlin less than 10 years ago, but they are to be changed to the inverted type, as they have become obsolete; in this country neither type has been used at all, except in one or two minor instances. Flaming arc lamps will be found in practically every large city abroad while this luminant remains an advertising medium with us.

The lamps used for lighting our homes to-day were the lamps used for public lighting yesterday, so that we may predict with fair accuracy that the lamps used to-day for public lighting will soon see their way into our buildings.

Street Lighting.—We have heard much of the superior street lighting to be found abroad, but nevertheless an American would have to be decidedly blasé not to be forcibly struck by the profusion of lights and the high intensity of the illumination involved. London is divided into a large number of boroughs and each is apparently trying to outdo the other in providing the best street illumination possible, regardless of expense, with the result that there are all kinds and conditions of lams hung in almost every conceivable manner. The subject was recently investigated by a committee for the city of London, and the report is a valuable addition to lighting literature. Outside lamps are very popular with storekeepers, and in a large number of instances hoods with transparent lettering are placed upon the street side, a practice which could be followed in this country to advantage.

Scheveningen, a summer resort in Holland, boasts a mile of flaming arcs along the ocean. These are installed upon handsome steel poles which would do credit to a metropolis.

The Hague.—Combination trolley and light poles; the lamps consisting of flame arcs which burn until midnight, and incandescents for the balance of the night.

Berlin.—There is probably no other city in the world where the results of active and intelligent illuminating engineering in public lighting are so manifest. The gas works are operated by the municipality, and the managers have brought forward the very best lamps which they could find in order to satisfy the taxpayers that the results were better than could be obtained by means of the latest designs in electric lamps.

At present gas has the better of it, there being some 800 electric arc lamps as against about twice that number high pressure gas lamps, and if the present plan is completed the whole city will be lighted by gas lamps within 5 years at an expense of $1,750,000.

Dresden.—Both gas and electricity are furnished by the municipality, a feature of the lighting being a number of installations of incandescent electric lamps, which are far from being successful, owing to their proximity to flaming arc lamps.

Munich.—This is one of the cities which boasts much that is old and quaint in architecture, but the street lighting is decidedly modern, which means that flaming arcs, on handsome steel poles, are an attractive feature of the city.

Lucerne.—The lighting here is of the spectacular nature, for barrels of burning tar are poured from the top of Mount Pilatus for the edification of the tourist.

Mürren.—This is one of the vantage points in the Alps, close to the glaciers, reached only by a funicular, and containing some half dozen hotels. Flame arcs mounted on handsome steel poles are used to ornament the mountain path.

Paris.—"La Ville de Lumiere" is fast becoming an echo of the past. Low pressure gas and open arcs no longer produce an effect in keeping with her sobriquet of the city of light; for we judge by comparison. There is one striking installation of flaming arc lamps in Paris; but as they are hung only 20 feet above the pavement the effect is decidedly bad.

General.—The principal differences between Europe and America in the minor details of the practice in public lighting are as follows: Circular or boulevard globes on gas lamps are unknown abroad, but the lack is made up by the use of reflectors which we had entirely neglected. The following types of lamps are used abroad with great success, but have not made any headway here: Inverted low and high pressure gas lamps, vertical and inclined carbon flaming arc lamps.

Interior Lighting.—When comparing the lighting conditions abroad we must remember that the spirit of competition between the great luminants, gas and electricity, is much keener there than at home. In London one company alone maintains nearly 200,000 burners for consumers, and in addition nearly 50,000 public lamps.

Gas is used for many purposes, and in many instances which are given over to electricity in the majority of cases here. The result is that gas fixtures are an ornament rather than an eyesore. This is especially true in Germany, where *art nouveau* is in great favor, and rightly so, to judge from the beautiful effects obtained.

In glassware, other than the very handsome installations, we have not much to learn, as the new high efficiency lamps which have been used to replace the older types are as a rule somewhat larger in size and do not fit the old glassware.

The matter of maintenance receives much more care and attention than we bestow upon it, and broken mantles or dirty bulbs are the rarest exception. The indictment against America, on account of having sources of high candle power in the line of vision, must also be made against Europe, especially in the large cities. Europe has anticipated us in the use of these modern lamps, but we have anticipated them by spreading a deeper and better understanding of their use and misuse.

It is indeed fortunate that illuminating engineering has made a strong foothold in this country, at a time in advance of the general use of light sources, which are great menaces to our eyesight unless properly used. We are making history in lighting to-day, and it behooves us to get together and make history worthy of our best efforts.

The old luminants will soon be replaced by the new, and we, as illuminating engineers, have a magnificent opportunity to obtain for the present generation, and the generation to come, conditions which will not only tend to conserve our natural resources through the intelligent use of lighting appliances, but also to conserve and protect, perhaps better, the physical vision of our fellow beings.

Outdoor Lighting for Games.

[Communicated by "R."]

Gas lighting engineers and contractors have placed a greater number of outdoor lighting plants this season than usual. In past years most exterior lighting was confined to lighting up works where night operations were in progress, perhaps nightwork was underway in leveling a building, or in a stone works, or in connection with some special work on a railway line. Then, again, there used to be a moderate demand upon lighting engineers for lighting facilities for lawn parties for a single night, and many of the lighting firms carried special lamps for one-night stands in order to accommodate this class of patrons; but in recent years the lighting engineers have been called upon to provide regularly installed gas lighting equipments for outside night games. The night games not only include amateur tennis or croquet, but also professional games by travelling companies. Wild-West shows, polo and other outdoor entertainments are now quite perfectly lighted by gas arcs and other forms of lighting for night service. The plan of distribution of the lights, the improved gas arcs, the systems which have been modelled for conveying the gas to the jets of the fixtures, and other improvements and inventions, have resulted in making it possible for the experienced lighting contractor to provide outdoor entertainments with effective lighting systems. Years ago the outdoor lights for games and parties almost always failed. The oil lights used to cause trouble, often serious, as the oil would get over everything and so dangerous fires were caused. Owing to the danger and mess, outdoor games and entertainments were not so popular as now, and the lighting firms of the community were not called upon to install lights very often; but, with the introduction of proper means by which games can be furnished with good lights for night players, the conditions have been changed and orders for night lights for this service are not infrequent.

Tennis is one of the night games which has been introduced extensively since it has become possible to furnish a good illuminant at reasonable prices. Fig. 1 is a drawing of one of the installations. In order to put in a system of gas arc lighting for this game the ground is first measured up and proper plans made for carrying the gas main from the street to the plot of land where the game is to be brought off. The pipe can be carried over the surface of the ground, if the distance is through a grassy pasture, thereby saving digging a trench save at the points where the pipe has to be covered. The gas pipe is extended to the proper point next the ground where the poles and net are placed and then connection is made for the uprights. In order to get a supporting line of wires, the four posts may be put up as shown, and the lamps supported from wires stretched between. The pipe line can be run along this wire and attached thereto for support. The necessary valves should be furnished at a point where any member of the party playing can turn on or extinguish the lights at will. Quite a number of the tennis courts throughout the country have been furnished with night-lighting outfits of this character.

Various forms of posts are used in the work, depending upon the amount of money the patron wishes to invest. Sometimes four plain-corner posts are used for the supporting of the entire lighting equipment. Then, again, the host or hostess wishes to have elaborate metal posts. There are posts of all descriptions in the market available for this purpose, and there are also some forms of concrete posts. Also, plain, hardwood posts, made from regular lighting pole timber. There are also numerous forms of braces and supporting brackets, as shown, fixed to the post, in Fig. 2. In this case the extending metal arm supports the lamp at its extreme end, as shown. The supply pipe for the gas runs through the center of the post, or up along the outside of the post, out over the arm to the lamp. Then there are two-post drops, as in Fig. 3, with the lamp hanging between the two points.

Not long since the writer was present at an outside night amateur circus given by some rich people for the benefit of some charitable institution. Considerable money was put out on the rings and the lighting was fine. Fig. 4 illustrates the general plan of the three rings. The lighting outfit is distributed between the rings *A*, *B* and *C*, and at the ends. A line of gas pipe was put along the outside of the circuit of 3 rings and connections made at the different points to provide gas for the drop gas arcs.

Various plans of a similar nature have been introduced for illuminating outdoor night events. The popularity of night games is increasing. Sometimes it is the dance on the lawn. The cold weather is not a handicap because there are skating and sledding parties planned for the winter nights. There are also new games of the snow season, some of which are carried out by the artificial light distributed over the plane.

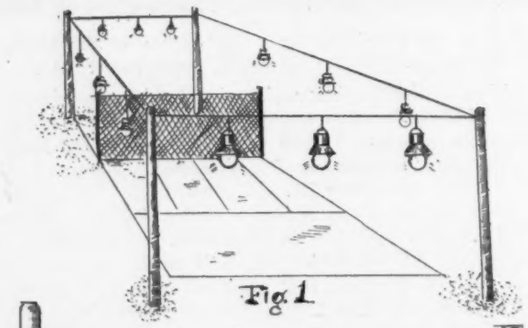


Fig. 1.

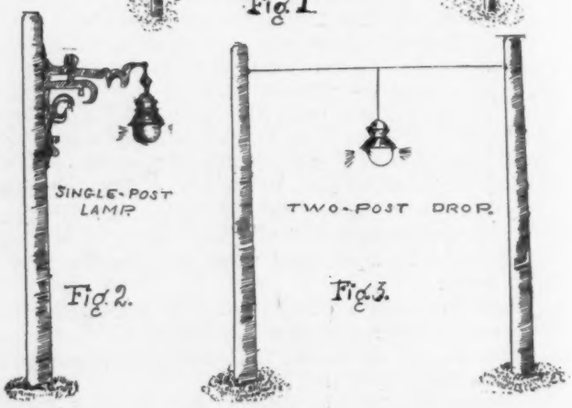


Fig. 2. Fig. 3.

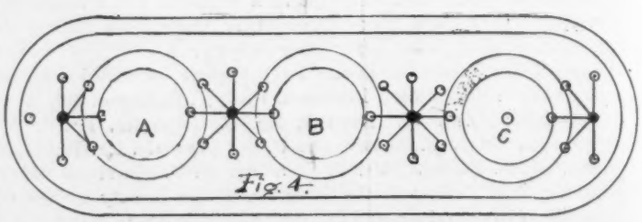


Fig. 4.

THREE-RING LIGHT, PLAN.

[Communicated.]

Some Notes From Abroad.

Should we judge by the familiar proper names about us, we could well say that a New Yorker would not feel ill at ease in Holland; for

Fig. 1.—Moving Coke in Amsterdam.

aside from the "Vans," we have "Harlem," "Flushing," "Utrecht," and many others quite as familiar. The similarity stops here, for the nearest approach in example to the lowlands in appearance which we have is Jamaica Bay, and that is as yet devoid of canals, and probably always will be of windmills and cows.

Guidebooks failed to impress upon the writer that Amsterdam was a city of canals, and, to say the least, it is a bit unusual to find the main street of a city of over half a million inhabitants centered with one of no mean dimensions; and, further, to find half of the other thoroughfares so divided. That gas and coke find a good market should seem to be the case, for the scow (shown in Fig. 1), laden with clean, gray coke, was being pushed through one of the canals by its two attendants, and it requires men of muscle to push off these scows at a snail's pace.

There is one feature of European cities which is, to say the least, peculiar. They are, of course, older than our own by centuries, but the lighting equipments are so new and clean, and with lamps of the very latest pattern in use, the contrast is very great.

High pressure gas has not been tried here as yet, and in line with the general movement throughout Europe, flaming arc lamps are used to advantage. It is a long step from open flame gas to flaming arcs; but this is what has occurred on the street shown in Fig. 2. The handwriting is on the wall, and America will soon be

Fig. 2.—Amsterdam.

Fig. 3.—A Stone Lamp Post.

included in the movement toward, not only sufficient but abundant, public lighting on the prominent thoroughfares of her great cities. Will it be high pressure gas lamps or high efficiency electric lamps? While the electric lamp, shown in this cut, may not be of great merit, the installation has a feature of considerable merit, in that it not only supports the lamps but the trolley wires as well, and this application has been neglected, with one or two exceptions, in our modern equipments. In one of the quaint old villages near Amsterdam the lighting of the one street has been cared for in a manner which bears the marks of age and permanence as well, for the lamp posts are of stone and the lamps burn Standard oil. One is shown in Fig. 3. Its age could not be ascertained, but as is usual the guide gave the assurance that it was "very old."—OWENS.

Gas Engine Driven Electric Plants Versus Electric Motors Fed from Central Stations.

By MR. R. D. DONALDSON, in *Electrical World.*

The argument presented herein is on the costs, reliability and general running conditions of small gas engines generating electricity for manufacturing purposes versus the purchase of the necessary electrical energy from a central station. The figures given on gas engine performance are not the results that can be obtained in practice in the majority of cases to-day, where the care given the gas engine may not be all that it should be, but is such as is usually accorded it.

The comparison is based on the operation of a printing establishment which requires 23-horse power in motors. The load conditions of this installation, which, at the present time, is fed from 220 volt, direct current, central station mains, are known very accurately. Table I. gives the energy consumption per month.

TABLE I.—*Actual Energy Consumption for Eight Months.*

Month.	KW-Hours	Equiv. H.P. Hrs.	Bill.
August	630	845	$37.85
September	884	1,185	53.04
October	1,374	1,845	78.74
November	1,342	1,800	77.12
December	1,184	1,590	69.22
January	1,233	1,655	71.68
February	1,250	1,675	72.54
March	1,261	1,690	73.08

For 8 months, and the cost of that energy at motor rates. Table II. gives the rating of the different motors, the machines driven, the hours operated per day and the percentage of the average actual load on the individual motors to their rated output. Table III. gives the actual horse power hours consumed by the motors per day.

TABLE II.—*Present Installation.*

Percentage of Actual Load to Rated Load.	Horse Power in Motors.	Machines Driven.	Average Hours Use per Day.
70	1—5-horse power.	Line shaft (6 Gordons and 1 cutter)	7 hours.
65	2—5-horse power.	2 Babcock Optimus No. 7	4 hours.
55	1—3-horse power.	Pony press.	4 hours.
50	1—2-horse power.	2 wire binding machines.	3 hours.
90	1—2-horse power.	Pony press.	1 hour.
70	1—1-horse power.	Folder.	3 hours.

The energy consumed in an average day is 64-horse power hours, or 47.7 kw. hours, which for 26 days a month equals 1,240 kw. hours per month. The total maximum demand of the installation is 23-horse power, or 17.5 kw. In figuring the cost of gas engines the following expenses must be taken into account: (a) Interest on plant; (b) depreciation of plant and building; (c) insurance; (d) fuel cost; (e) cost of cooling water; (f) lubricating oil and waste; (g) attendance; and (h) maintenance and repairs.

TABLE III.—*Daily Energy Consumption.*

Actual Load.	Time.	H.P. Hours.
.70 × 5-horse power = 3.5	× 7 hours	= 24.5
.65 × 10-horse power = 6.5	× 4 hours	= 26.0
.55 × 3-horse power = 1.65	× 4 hours	= 6.6
.50 × 2-horse power = 1.0	× 3 hours	= 3.0
.90 × 2-horse power = 1.8	× 1 hour	= 1.8
.70 × 1-horse power = 0.7	× 3 hours	= 2.1
Total		64 h.p. hrs.

If a private plant were installed, allowing a small increase in installation, a generating unit rated at 20 kw. would have to be used. To run this generator a gas engine of 40-horse power rating would have to be used, and for this size gas engine plant the cost of engine with generator would be $65 per horse power, everything installed, and for the installation as suggested the cost would be $2,600. On such a plant the fixed charges would be as follows:

Interest on plant 5 per cent. (.05 × 2,600)	$130
Depreciation on plant, 12½ per cent	325
Insurance, 2 per cent	52
Per year	$507

The fuel consumption per horse power hour varies with the load. Under usual conditions the rate for a gas engine of the size under consideration, using illuminating gas having a heat value of 630

B.T.U., would be 24 cubic feet of gas per horse power hour at full load. This increases as the load decreases, so that at 0.2 of full load the fuel consumption is 2.5 greater than this. The following table shows how great is the increase in fuel consumption per horse power as load decreases:

Gas Engine.	Max. Load.	Variation of Fuel Consumption with Load .9	.8	.7	.6	.5	.4	.3	.2	.1
Hit and miss regulation	1	1.03	1.08	1.14	1.23	1.35	1.50	1.8	2.5	3.0
Throttling regulation	1	1.06	1.13	1.21	1.33	1.50	1.75	2.2	3.0	5.0

The motor installation requires an average of 64-horse power hours per day in an 8-hour day. This gives an average load of 8-horse power all day, but from careful analysis of the load conditions by figuring on 75 per cent. of the maximum load part of the day and 20 per cent. part of the day, and averaging the two rates, gives the average rate per horse power hour. At 20 per cent. of the rated load the fuel consumption is 2.5 times that of the normal load rate, or 2.5 × 24 = 60 cubic feet per horse power hour. At 75 per cent. of normal load the fuel consumption is 24 × 1.11 = 26 4 cubic feet per horse power hour. By averaging the two readings, the consumption is found to be 43.2 cubic feet per horse power hour.

It was shown that the energy consumed per month was 1,240 kw.-hours, or 1,660 horse power hours. With a consumption of 43.2 cubic feet of gas per horse power hour, the monthly consumption is 71,712 cubic feet, which, with gas at $1 per 1,000 cubic feet, will cost $71.71. The approximate quantity of cooling water required may be ascertained from the following: Figuring on 1-horse power and assuming an engine efficiency of 20 per cent. at the cylinder, 2,545 ÷ 0.20 = 12,725 B.T.U. per horse power hour are required. The jacket loss approximates about 40 per cent. of the heat expended, or the cooling water must carry off 0.40 × 12,725 = 5,090 B.T.U per hour. Assuming the inlet temperature 70°, the outlet at 150°, the number of pounds of water required is 5,090 ÷ (150 — 70) = 64 pounds per horse power hour. The amount of cooling water is practically independent of the load, so that the rated capacity of the engine should be taken in computing this; 40 × 200 (hours per month) = 8,000 horse power hours: 8,000 (horse power hours per month) × 64 = 512,000 pounds per month; 512,000 pounds = 8,200 cubic feet (1 cubic foot = 62.4 pounds) at 3 cents per 100 cubic feet; 8,200 ÷ 100 × 0.03 = $2.50 per month.

A gas engine running light takes nearly the same amount of oil as when loaded, so a 40 horse power engine running 200 hours per month, or 8,000 horse power hours, will at the usual rate of 0.008 pint of lubricating oil per horse power hour require 8,000 × 0.008 = 64 pints, or 8 gallons of oil. If this costs 30 cents per gallon, the cost = 8 × 0.30 = $2.40 per month for oil and an allowance of $1 per month should be made for cotton waste.

In the matter of attendance half of one man's time at $60 per month should be charged to this engine, or $30, and the maintenance at 5 per cent. per year on $2,600, the price of engine and generator, etc., is $1.30 per annum, or $10.80 per month. Inasmuch as this installation would take up a space approximately 10 feet × 15 feet = 150 square feet, and supposing that 3,000 square feet of floor space rents for $500 a year, the rental to be charged for the space is 150 ÷ 3,000 × $500 = $25 a year, or approximately $2 per month. This brings the total cost per month as follows:

Due to fixed charges	$42.25
Fuel	71.71
Water	2.50
Oil and waste	3.40
Attendance	30.00
Maintenance	10.80
Rent	2.00
Total cost per month by gas engine	$162.66

The cost of energy for this installation from the central station, 1,240 kw.-hours per month, is as follows:

1,000 kw. hours, at 6 cents	$60.00
240 kw. hours, at 5 cents	12.00
Total	$72.00

This gives a saving per month of $90.66, or a yearly saving of $1,087.92.

The above figures show a saving of approximately $1,100 per year by the use of central station energy over a gas engine driven generating plant. These figures have not included "outage," which is a large item in itself. With such a generating plant, not duplicated, the number of hours in a year during which the plant would be shut down would mean a large loss to the company. Thirty hours "outage" per year would be a conservative estimate, and if 12 men are employed at 50 cents an hour, the loss would amount to 12 × 0.50 × 30 = $180 in labor alone. The loss in time during a busy season would perhaps be double this. Besides the money considerations that can be figured on there are several items which must be considered.

The installation of a gas engine always means a considerably higher fire risk. Motors and wiring which pass the Fire Underwriters' inspection will practically never be the cause of fire, while no matter how close is the inspection on the gas engine and apparatus, the fire risk is large and increases as the engine and apparatus become worn. Moreover, odor and vibration nearly entirely belong to the gas engine.

Economically a gas engine is built for its rated load. The overload capacity of such an engine is very small; when that point is reached the engine stalls. When run underloaded the efficiency is poor. By breaking up the total power requirements into two or more units the initial cost is increased greatly and the operating expense is also increased. With a proper arrangement of motors the same efficiency is maintained no matter what part of the total load is carried when fed from central station mains.

The excessive strain on a gas engine, combined with the many and delicate parts, makes such an apparatus impossible to run continuously, The overhauling necessary may extend into the hours when the engine is needed. Such occurrences make the ease of starting and operation of the central station fed motors very pronounced. An interesting item in connection with a discussion on gas engines and motors is the fact that the gas engines have some 80 parts and the direct current motor 15. More parts always mean more trouble.

Burning Different Fuels in a Stove.

Mr. M. O. Potts, writing in *The Metal Worker*, on this subject, narrates the results of some investigations recently made in an attempt to establish the relative value of coal, coke and wood. He notes that in running through some clippings recently that he chanced upon an account of the fuel consumption involved in heating an office building of the Marion Stove Company, Marion, Ind. The clipping was from *The Metal Worker* of November 6, 1897, and the figures allow for some interesting deductions, as the following will show.

The office building was a detached structure 14 by 24 by 10 feet in size, containing 3,360 cubic feet of space and having five windows and one door. The stove was a No. 16 Special Retort Oak and was fired so as to keep the inside air at a comfortable temperature. The accompanying table includes figures taken from the original article with some additional figures worked up by the writer. The first column designates the kind of fuel: A, hard coal; B, soft coal; C, Illinois slack; D, coke; E, hickory wood. The second column gives the total weight of fuel used in each test; the third column gives the number of days of the period during which the corresponding kind of fuel was used: the fourth column gives the average temperature outdoors obtained during the test. The remaining three columns are based on the information given in the original article.

A building of the size stated presents a total of about 760 square feet of exposed wall surface. If we regard the windows as occupying about one-sixth of this surface, the loss of heat through the walls and the windows will be the same as if the exposure was entirely of glass, but in area equal to three-eighths of the actual area. Three-eighths of 760 is 285, and this may be increased 25 per cent. to take into account wind leakage and other exposure losses, and to this should be added the heat losses likely to take place through the floor and ceiling of the 1-story structure which the office building apparently is. The area of both the ceiling and the floor is approximately 336 square feet. It is usual to regard 20 square feet of ceiling or floor area as equivalent to one of glass, so that the glass equivalent of ceiling and floor combined is 33.6 square feet, making the total of the equivalent glass surface of the building 285 + 33.6 + 71.3 = 390 square feet.

To find the heat requirements we may assume that the air inside was kept at 70° for 12 hours during every day and that it averaged for the remaining 12 about 60°. This was a mean for the 24 hours of 65° inside. If we allow one heat unit as the transmitting power of 1

square foot of ordinary glass window per hour for every degree of difference between the temperature inside and that outside, we can multiply the total equivalent glass surface by the difference between 65° and the mean temperature for each test and obtain the figures given in the fifth column as the hourly loss in heat units.

The sixth column gives the amount of coal burned on the average per hour, on the assumption that the fire is kept in continuously throughout the period. Dividing column 5 by column 6 gives the figures in column 7, which represent the number of heat units apparently availed of from each pound of fuel burned. These figures run from 4,300 B.T.U. per pound of hickory wood to 9,350 per pound of coke. They show that the soft coal and the hard wood gave up apparently about the same amount of heat per pound.

The daily cost of fuel for the five tests listed was 12, 7, 4, 8 and 6 cents, respectively. While more soft coal than hard coal had to be used, the cost per day was less, and the weather was more severe than during the test with hard coal. It is probable that if the weather were more moderate and the fuel was burned at a lower rate as much heat per pound of soft coal would not have been developed as was actually obtained according to the last column.

The cost of producing the heat can also be ascertained. If we divide the daily cost of the fuel in each case by the number of pounds burned in a day the quotient is the cost of the fuel per pound. Having obtained the pound cost of the fuel we can divide the total number of heat units developed from a pound by the pound cost to get the number of heat units obtainable with 1 cent of fuel. The results show that 74,834 B.T.U. were obtained for 1 cent of Illinois slack; 43,123 B.T.U. were obtained for 1 cent of coke; 40,136 B.T.U. for 1 cent of soft coal; 38,932 B.T.U. for 1 cent of hickory wood, and 19,580 B.T.U. for 1 cent of hard coal.

Data and Results of Fuel Consumption Tests.

Kind of Fuel.	Fuel Burned. Pounds.	Duration of Test. Days.	Average Outside Temp. Deg. F.	Heat Loss Per Hour. B.T.U.	Fuel Per Hour. Pounds.	Heat Per Pound of Fuel. B.T.U.
A.....	534	15	40.5	9,750	1.48	6,600
B.....	2,034	47	34.5	11,700	1.8	6,500
C.....	622	16	33.3	12,500	1.62	7,700
D.....	1,365	37	28.0	14,400	1 54	9,350
E.....	435	8	40.2	9,750	2.26	4,300

Recent Practice in Coal and Coke Handling in British Gas Works.

[Prepared for the JOURNAL, by MR. JAMES I. SEAGER, Newcastle-on-Tyne, England.]

Introduction.—Within modern years it has been realized that manual labor, without the supplementary aid of mechanical contrivances of a very specialized nature, is inadequate to handle the raw material and the by-products of a gas works. No work can be more arduous than the labor of the retort house in works for the carbonization of coal, and, in spite of the admittedly immense value of the by-products, it has been justly said that the profits of a gas works are made in the retort house.

Within recent years the advance of mechanical appliances for handling material has been so great, as regards efficiency and reliability, that the position has advanced beyond the status of an adjunct to manual labor; in many cases hand labor, with the loss of time, expense, and factor of uncertainty, has been dispensed with to a very large extent, in favor of systems of mechanical handling which, while being flexible enough to meet the variation of requirements from time-to-time, are certain in their operations. Their necessity is obvious; for if a ton of coal fails to yield the maximum "foot candles" of gas, the loss cannot be recovered. Every fraction of a penny spent in handling coal and coke, in excess of the amount which is absolutely necessary, is a burden which can never be shaken off without the substitution of a more efficient system. Except only in very small installations it is now recognized that hand labor, besides being arduous for the laborer, is costly. There are now many gas works in England, both large and medium sized, where the coal is never touched by hand labor, from the railway wagon to the point of delivering as coke into railway wagon or cart, and it is proposed to summarize the chief features of British practice in mechanical handling as it relates to coal and coke. Other products of a gas works, such as sulphate of ammonia, will not here be touched upon, although progress in handling these is very marked; neither will the handling of lime and oxide be dealt with.

Coal Receipt and Storage.—In England, coal for gas works is usually rail borne, in which case the wagons are brought into the coal store or retort house, when possible, overhead and discharged by gravitation into the coal breaker, from whence again the broken coal gravitates to the boot of an elevator. The wagons are often moved to-and-fro by capstans turned by compressed air or electricity. This is shown in Fig. 1, showing the coal store, railway and capstans

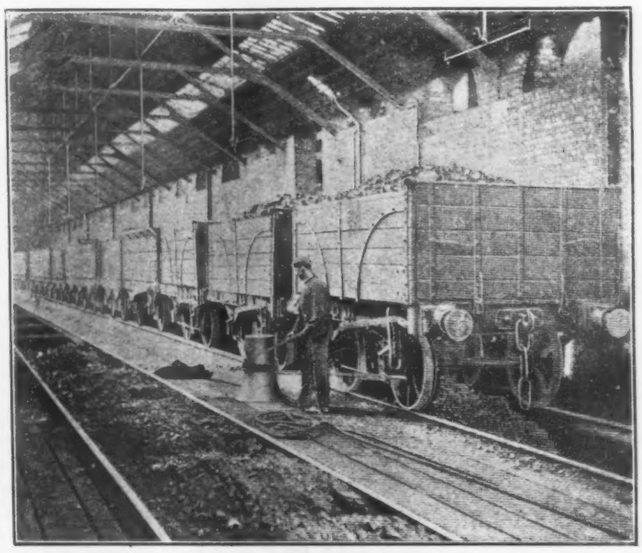


Fig. 1.

installed at the Grangetown gas works, of the Cardiff Gas Light and Coal Company, by the Wests' Gas Improvement Company, Limited, of Manchester. Compressed air capstans having dummy heads and gear for hauling the loaded railway wagons into the stores, bring them into position over the coal breakers. The wagons are there discharged and returned to the sidings. The capstans, motors and gear are inclosed in casings suspended from the girders supporting the railways. In some cases coal is conveyed to the gas works by canal. In such case a vertical elevator is frequently used which can be mechanically projected right over the barge, the coal being thrown into the boot of the elevator, from the top of which it is taken by some type of conveyor to the breakers, thence to the hoppers in the retort house or the coal store. This is excellently well shown in Fig. 2,

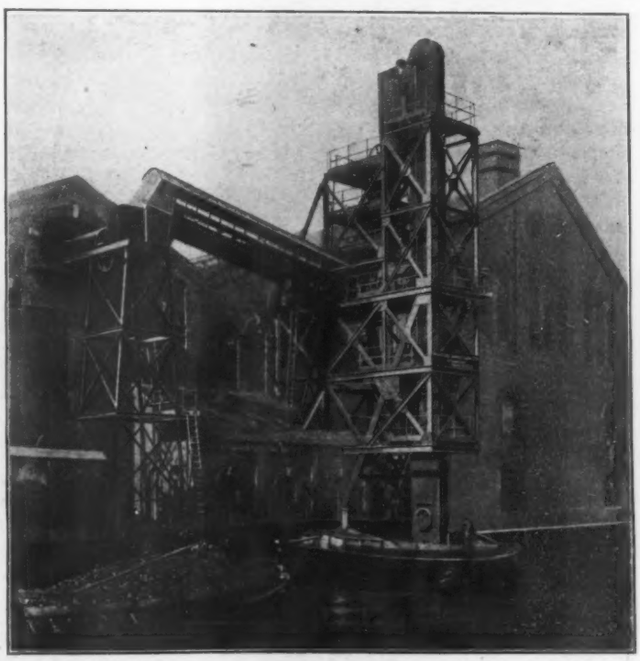


Fig. 2.

giving the arrangement adopted in an important English gas works. Sometimes grabs are used, these being raised from and lowered to the boat by steam or electric crane, Fig. 3. In some cases the wagons, if

Fig. 3.

with end doors, are tipped up at an angle by hydraulic rams and the whole wagon full of coal shot into the store. Fig. 4 shows a typical

Fig. 4.

wagon tip, coal elevator and storage hopper built by Sir William Arrol & Company, Limited, of Glasgow. The rear end of the wagon has, as will be seen, been raised by a hydraulic ram for the automatic discharge of the coal into a hopper underground, from whence it passes down inclined shoots to the boot of an elevator, which in turn raises it to the hopper in the high level. The elevator, which is driven by an electric motor of 5 B.H.P. can, in the instance illustrated, deal with 20 tons of coal per hour. Fig. 5 shows the arrange-

Fig. 5.

ment adopted at the Sheffield gas works. The coal is dumped from the coal wagon into the hopper of a coal breaker under the floor. It is then raised by an elevator, made by the Chain Belt Engineering Company, of Derby, for a distance of about 60 feet, and deposited on a band conveyor which runs in the roof of the retort house for a distance of 300 feet, the coal being thrown off the band at any required point.

Coal Breakers.—Where stoking machinery is in use the larger pieces of coal must be broken into something like uniform size, and this is done by mechanical breakers. In this connection electrical drive is one of the most recent developments in British gas works practice, and Fig. 6 shows a typical electrically driven coal and coke

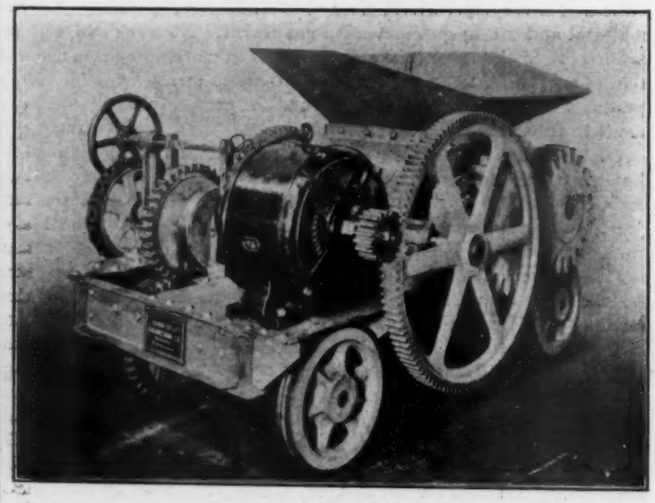


Fig. 6.

breaker. The coal, which is broken into cubes from 2 inches to 3 inches square, passes through a pair of rollers composed of steel-toothed disks, the teeth being specially shaped to suit the class of coal. The machine illustrated is made portable by being fitted with road or tram wheels, and in order to work the machine it is only necessary to cramp its frame to the floor or block the wheels, screwing or nail-

ing the blocks to the floor. Similar machines, driven from the engine or motor forming part of the elevator, are also used in fixed positions adjacent to the boot of an elevating system in retort houses using charging machines. Feeders are often attached to supply the coal in regular quantities. Messrs. Wests' Gas Improvement Company have such a feeder which is fitted with a capacity adjusting gear, and also with a screen for separating the large from the smaller pieces, the latter being by-passed to the elevated without going through the breaker.

Elevators and Conveyors.—When stoking machinery is used, or in the case of inclined retorts, large quantities of coal are stored in overhead hoppers in the retort house, holding as much as 60 tons, the gravity bucket elevator and the fixed bucket elevator, sometimes the grab and crane, are chiefly used for this purpose. With elevators one man can quite easily unload and store 90 tons of coal per working day of 10 hours.

Many kinds of conveyors are in use, and, if space permitted, typical examples could be quoted; but as the various types are too well known to require description, space need not, therefore, be taken up. The gravity bucket is quite common, and the push-plate or scraper conveyor is also largely used, especially when the coal has to be fed into several hoppers or parts of a store, in which case this conveyor is easily adapted for such work. A series of plates or scrapers attached to an endless chain are pulled along a steel trough, and by an arrangement of sliding doors in the trough the coal can be delivered at any desired point. Band conveyors are cheaper to install than the above types, though not perhaps so durable. They consist of rubber and canvas belt running on rollers, placed in pairs, each roller at a slight inclination to the horizontal, in such a manner that the band forms itself in a shallow trough. This type is extensively used in British gas works in traversing the retort houses, where long horizontal runs are required, as for example at Glasgow. When delivery is required at one point only the pan conveyor is the least costly to install and cheaper in upkeep, requiring little attention. It consists of pressed steel, rectangular, pans overlapping each other and carried on an endless chain, and is much in favor. In addition to gas engine drives, electricity and hydraulic powers are respectively largely used to drive such conveyor systems. Fig. 7, shows the type

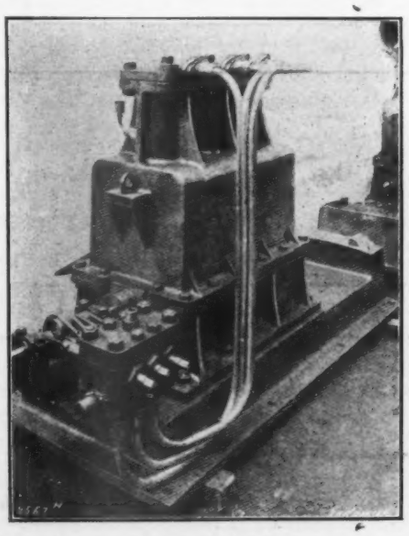


Fig. 7.

made by Sir W. Arrol & Company, Limited, which is extensively used for working conveyors. The three cylinders are formed in one casting with the framing and are lined with gun metal, the pistons being of the same material. In the smaller size the power of the motor is 6 B.H.P., the cylinders being 4¼ inches diameter and 6-inch stroke. A larger size, with cylinders 6 inches by 8 inches, gives 20 B.H.P. The speed of the motors is up to 60 r.p.m.

Stoking.—Machinery for performing this operation was introduced about 30 years ago, Mr. John West, founder of Wests' Gas Improvement Company, being amongst the first to successfully put such into practice. At first only in the largest gas works did it pay to install such machinery, but in later years the strides made have been so rapid that many medium-sized works have adopted some form of mechanical stoker. About 15 years ago a system of inclined retorts that was introduced has since been very largely installed. At the time it was thought this would do away with stoking machinery, the idea being to utilize gravitation for the charging and discharging process. The retorts are placed at an angle of 32° to the horizontal, this being the "angle of repose" of coal. When any substance is tipped in a heap it forms into a conical mass and each further quantity tipped on the top "reposes" or forms itself along the same angle, hence the term "angle of repose." In the inclined setting the coal is fed from measuring hoppers, each having a sliding door at the bottom actuated by a lever. The coal is elevated and conveyed to these in any suitable manner. To charge or reload the attendant has only to move the lever which operates the slide; the coal falling into the retort spreads itself into an even layer along the floor of the retort. A "stop" at the bottom regulates the thickness of the charge, this building up to the height of the "stop."

The retorts being in tiers, it is obvious that differential impulses would be given to the coal in leaving the measuring chamber. Thus varying thicknesses of coal in different retorts according to the impulse would be obtained. To obviate this, shoots of varying lengths are used to suit the heights of the retort mouthpieces, and fitted with systems of baffle-plates, in such manner that each retort is fed with uniform impulse.

To discharge the retort the bottom door is removed and, by means of an iron bar, the mass is "tickled" or "pricked" and falls by gravitation into the receptacle or conveyor provided. It is somewhat of a debatable question amongst British engineers whether "inclines" or horizontals with stoking machinery are most advantageous.

Of mechanical stoking machinery there is now much choice, many kinds being in use in English gas works. Certain points must be considered in making a selection. Charging must be done in a minimum time, for obviously the heat of the retort is going down whilst open. The coal must be placed in the retort in as even a layer as possible so that the "charge" is equally burned off. The operation of withdrawing the burnt off charge and replacing with a new charge of coal must be done so as to cause as little damage as possible to the retort.

The machines may be divided into two classes, those in which some portion of the machine actually enters the retort in the form of a "scoop" or "pusher;" secondly, those in which the coal is projected into the retort in the same way that a man projects the coal from his shovel.

The Fiddes-Aldridge Machine.—In most cases two machines are required for the two operations of charging and drawing, although, in the case of the Fiddes-Aldridge machine, both operations are done with one machine—a decided advantage, other things, such as wear-and-tear, being equal. This machine has not yet stood as lengthy a test of time as is the case with machines like West's and the Arrol-Foulis, but from its present performance it appears to be admirably adapted to working conditions. The Fiddes-Aldridge performs the two operations of charging and discharging the retort with one cycle; that is, the mechanism which puts in the coal at the same time pushes out the coke at the other end of the retort. Of course, this is only applicable to "through" retorts. It has numerous advantages, especially where coal and coke handling machinery is introduced, for where, under ordinary circumstances, coal is put in on both sides and coke pulled out on both sides, necessitating two sets of coal elevators and conveyors and two sets of coke conveyors, with the Fiddes-Aldridge machine all the coal is kept on one side of the retort house and all the coke on the other side.

The Fiddes-Aldridge stoking machine, shown in Fig. 8, which is constructed almost entirely of steel, consists of an inner and outer framework, the latter being mounted on wheels so that the machine may travel up and down the retort house. The machine can be so constructed that it will serve any number of tiers of retorts, for which purpose the inner frame can be raised or lowered by means of steel wire ropes. Coal is delivered from an overhead hopper into the measuring chamber on the front of the machine, and from thence, through a shoot, under which passes the push-plate conveyor or chain, on its way into the retort. This chain consists of parallel plates held in a vertical position by arched stays and hinged near their upper edges, so that it may be wound round a vertical wheel, which enables the machine to be adapted to retort houses, hitherto used for hand-work, where space is limited.

From the arched stays are suspended push-plates, which are usually from 3 to 4 feet apart, and so arranged that, when the chain is entering the retort, they are held in a vertical position, but on the return stroke they are free to lift. Thus each plate pushes a quantity of coal

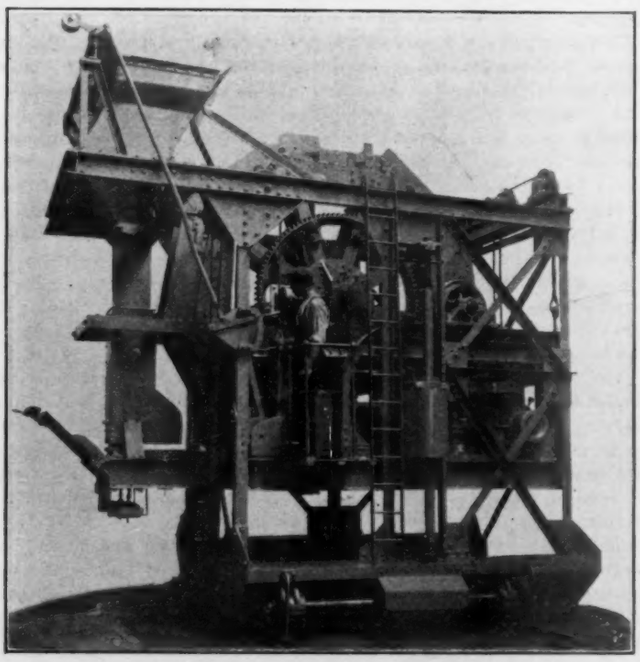


Fig. 8.

into the retort, and on the return stroke automatically lifts and allows the coal to pass under it, thus assisting in levelling the charge. The front push-plate is of heavier construction, and, during the operation of charging the retort with coal, it pushes the coke through the vessel. A hinged plate (called the apron plate) drops into the mouth of the retort, and bridges over the space between the machine and the retort, the apron plate and the bottom of the retort over which the coal is pushed forming the bottom of the chain. As previously mentioned, the coal is delivered from the overhead supply into the measuring chamber and descends by a shoot into the chain. The upper part of the coal shoot is provided with a sliding door, which when withdrawn releases the coal into the measuring chamber, and at the bottom of the shoot two movable plates are fixed, which regulate the flow of the coal into the chain. The back end of the chain is attached to the chain wheel, which is driven by a pinion engaging in a spur wheel attached to the side of the chain wheel.

The outer frame, which is mounted on four cast steel travelling wheels, carries the measuring chamber and shoot, some of the lifting pulleys and part of the travelling gear, consisting of a long, square shaft, upon which slides a bevel-wheel, carred on a bracket on the inner frame, and geared into another bevel wheel, also on the inner frame. The lower end of this is geared to the rail wheel by means of miter wheels. The inner frame, which is suspended from the outer frame by four steel wire ropes, carries the chain and wheel, lifting, charging, travelling and electrical gears. The electrical gear consists of a continuous current, inclosed-type motor, fitted with solenoid brake, and all the motions are operated by an ordinary tramway type controller, in conjunction with clutches. The current is obtained from overhead wire by means of collectors fixed to the outer frame, and conveyed to the motor by flexible cable. The driver can obtain access to the machine at any desired level by an outside ladder and platform, and he stands in such position that he can overlook all the operations of discharging, charging, lifting, lowering and travelling of the machine, and the whole operation of pushing out the coke and withdrawing the conveyor only takes half a minute, a record time for such work.

Fig. 9[1] gives a general arrangement of the Fiddes-Aldridge machine. Particular attention may be drawn to the automatic overhead, striking gear, shown in dotted lines, which operate in conjunction with Aldridge and Gibson's patent hopper doors in the retort house. To the underside of the overhead hoppers sliding doors are fitted, which the stoking machine opens and closes as it travels from one retort to another. These doors are placed between the vertical rows of retorts, and are attached to double ended levers, which are worked by means of two upright pins fixed to the measuring chamber, in such a way that the "forward" pin engages with one end of the lever and opens the door, and the "after" pin engages with the opposite end of the lever, closing it, the coal having filled the measuring chamber on the machine in the interval, so that the machine always has sufficient coal for one charge. These pins are so arranged that they may be thrown out of action when it is desired to travel the machine without operating the doors.

(To be Concluded.)

1. This drawing will be printed in our next issue.

The Felt Method of Compressing Gases and Extracting Gasoline from Natural Gas.

A correspondent in Bradford, Pa., writing under date of the 29th ult., respecting the matters named in the heading, says that natural gas companies, as well as oil producers, will be interested to know something respecting the Felt process for compressing and purifying air and gases; also, for the manufacture of gasoline from natural gas, of gravities ranging from .66 to .76.

This process promises to the producer, in the way of additional revenue from his wells, the utilization or recovery of a product which is now going to waste. For some time experiments were conducted by the Felt Gas Compressing Company, at Bradford, Pa., up to the present time, when Mr. Felt asserts, the business is beyond the experimental stage and really appears a demonstrated success. The gas is compressed in association with a cooling liquid, which is injected into the compression cylinder at each stroke, which effectually seals the stuffing box, piston and valves, fills all clearances and takes up the heat developed during compression. According to this method the water and impurities contained in the gas are absorbed by the oil, which is separated from the compressed gas after leaving the compressor by passing same through a separator. The gasoline produced by this process is practically odorless, absolutely water white, and much superior for power purposes to that produced from crude petroleum.

The calorific value of the gas, after extracting the gasoline, is considerably increased instead of being diminished as heretofore. The quantity of gasoline which may be produced from 1,000 cubic feet of natural gas ranges from 1 to 4 gallons, according to the density of the gas treated, which varies with gas from different localities.

The cost of the necessary machinery is within the reach of any oil producer, or a central plant can be erected to treat the gas from several adjoining leases, thereby reducing the cost of operation. By the operation of this process the value of any lease will be greatly increased.

Another object of Mr. Felt's invention relates to the drying of air for use in connection with blast furnaces, Bessemer converters, or other metallurgical purposes, whereby air of low constant humidity (.8 of a grain per cubic foot) may be applied in pre-determined and uniform quantity.

It is a well known fact that the use of a blast of low humidity, or "dry air," as it is called, in the operation of blast furnaces and the like, has shown a marked saving in fuel consumption and a large increase in the production of the furnace; but the great cost of installation has prevented, so far, the general adoption of the apparatus now employed for such purpose.

Recent Patent Issues.

Prepared for the American Gas Light Journal by Royal E. Burnham, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 10 cents.

934,436. Gas Producer. H. I. Lea, Pittsburgh, Pa. Assignor to Westinghouse Machine Company.

934,447. Fluid Sealed Valve. H. I. Lea, Pittsburgh, Pa. Assignor to Westinghouse Machine Company.

934,448. Gas Purifier. H. I. Lea, Pittsburgh, Pa. Assignor to Westinghouse Machine Company.

934,504. Meter for Liquids and Gases. F. N. Connet, Providence, R. I.

934,617. Gas Condenser. A. W. Mockridge, Jersey City, N. J.

934,679. Gas Purifying Apparatus. H. I. Lea, Pittsburgh, Pa. Assignor to Westinghouse Machine Company.

934,737. Gas Lamp. J. G. Kothrba and H. W. Freese, Chicago, Ills. Assignors to A. E. Bond.

934,837. Globe for Inverted Incandescent Gas Burners. L. W. Young, Pittsburgh, Pa.

935,119. Gas Generator. J. S. Loder, Reno, Nev. Assignor to Loder Smelter and Refiner Company.

935,283. Gas Generating Apparatus. J. H. Stringham, Jersey City, N. J. Assignor to Westinghouse Machine Company.

935,344. Process of Making Water Gas. C. E. White, Phila., Pa.

935,429. Gas Generating Apparatus. J. H. Stringham, Jersey City, N. J. Assignor, by mesne assignments, to Westinghouse Machine Company.

935,444. Process for the Manufacture of a Mixture of Gas and Air for Illuminating Purposes. F. W. Wolff, Berlin, Germany. Assignor to the firm of Selas-Gesellschaft mit beschrankter Haftung.

935,725. Automatic Gas Cut-off. R. F. Ainsworth, Andover, O.

935,735. Acetylene Burner. A. Bray, Leeds, England.

936,013. Gas Main. M. G. Moore and R. C. Glazier, Johnstown, Pa.

936,049. Apparatus for Producing Fuel and Gas from Peat. W. L. Shepard, Elmwood, Conn. Assignor of one-half to H. J. Wickham, Manchester, Conn.

936,098. Inverted Gas Lamp. C. L. Duenkel, East Orange, N. J.

936,120. Device for Lighting and Extinguishing Gas Burners at given hours. E. de Gounevitch, Paris, France.

936,144. Apparatus for the Manufacture of Gas. W. H. Morgan and J. Densley, Weston-super-Mare, England. As ignors to Walls, Limited, Birmingham, England.

936,177. Manufacture of Incandescent Gas Mantles. A. Simonini, Atlantic City, N. J. Assignor to Welsbach Light Company.

936,212. Gas Apparatus. J. F. Beals, Los Angeles, Cal.

PROCEEDINGS, EIGHTEENTH ANNUAL MEETING, MICHIGAN GAS ASSOCIATION.

HELD ON BOARD STEAMER "ST. IGNACE," FROM DETROIT EN ROUTE TO MACKINAC ISLAND.

FIRST DAY—NOON SESSION.

The meeting was called to order at 1:30 P.M., Tuesday, September 14th, by the President, Mr. James T. Lynn, of Detroit. The desk was occupied by Mr. A. P. Ewing, of Detroit.

On motion of Mr. Shacklette the reading of the minutes of the last meeting, and the roll call as well, were dispensed with.

The President called for the

REPORT OF THE EXECUTIVE COMMITTEE,

which was read by the Secretary as follows:

Mr. President and Members—The Executive Committee of your Association begs leave to offer the following report:

At the last regular meeting of this Association, held in Kalamazoo, September 23, 24 and 25, 1908, the report of the Committee on Place of Next Meeting was referred to the Executive Committee for action.

On November 23, 1908, a meeting was called by the President, Mr. Lynn, at his office, 402 Union Trust Building, Detroit, Mich. There were present the President, Messrs. B. O. Tippy, D. H. Frazer and your Secretary.

After a thorough discussion it was decided to offer the members an opportunity to hold the next meeting on board one of the large D. & C. steamers, leaving Detroit September 14th. As a result the following was mailed to each member:

The Executive Committee of the Association recommends that the next meeting be held on board one of the D. & C. boats, to take a 3 days' trip from Detroit to Mackinac Island and the Soo and return.

The boat will accommodate 250. In order to have a sufficient number to enable us to make this trip it will be necessary to pledge for not less than 200 tickets. How many tickets will you pledge yourself to pay for at $22 each? This amount covers all expenses on board the boat, including fare, stateroom, meals and entertainment. You will be able to get wireless messages through the Clark Wireless Telegraph Company, of Detroit, at any time, and railroad connections any day from either Port Huron, Mackinac Island or the Soo.

At the price named, if we secure 200 pledges, we will be able to furnish ample entertainment each evening on the boat. This will be strictly a "Stag" affair. It will not be limited to members of the Association, as you may have citizens in your city whom you wish to entertain, and we think this will be an excellent opportunity.

Responses to this letter were so encouraging that a second meeting of the Executive Committee was held March 27, 1909. The President and your Secretary were in attendance. Mr. B. O. Tippy missed the train and Mr. Frazer was prevented from attending. A thorough discussion of the conditions brought out the fact that the majority of the members wanted the meeting on board the boat, and as a result a circular was published with full information with regard to the trip,

This circular was sent to the Illinois Association, to the Indiana Association, and to all of the Michigan Gas Companies, to all members of our Association, to the Canadian Gas Association, to the Southern Association, and, at the courtesy of Mr. Bigelow, of *Light*, the entire circular was reproduced in his issue of June, 1909. A further request for tickets was received, and on July 4th we sent out a Secretary's report that brought the number to 147 promised tickets, assuring us of a successful trip. We take for granted that at least 25 per cent. of those who attended the meetings would signify their desire some time between the middle of July and the 1st of September.

We made arrangements with the D. & C. Navigation Company for the reservation of the Steamer "St. Ignace."

Amendment to the Constitution.—At the last regular meeting an amendment was offered to the constitution to change the date of meeting as follows:

On account of the uncomfortably warm weather that usually prevails in Michigan about the date of the annual Michigan Gas Association meeting, as now fixed by our Constitution, I hereby recommend on behalf of whom I believe to be a large portion of the membership, that the Constitution of the Association be so changed that our Annual Meeting will begin on the third Wednesday of May each year.

It was also moved to change Article 17 of Sec. 5 of the Constitution as follows:

One person may be elected to the offices of Secretary and Treasurer, to receive a salary of $200 per year.

The President—Gentlemen you have heard the report of the Executive Committee, what is your pleasure?

Mr. Douglas—Do I understand that the adoption of this report of the Executive Committee carries with it the adoption of the amendment to the Constitution?

The Secretary—Under our by-laws the amendment will have to be voted upon by a separate vote.

It was then moved, seconded and unanimously carried that the report be received and placed on file.

The President—If the Secretary will read that amendment again we will take action on it now.

The Secretary—I will read what the Constitution says regarding the amendment.

Action on this was postponed until the second session.

The annual reports of the Secretary and Treasurer were then presented and read by Mr. Ewing. Both reports were vouched for by the Auditing Committee, and were ordered received and placed on file.

Mr. B. O. Tippy took the Chair, at the invitation of President Lynn. The

PRESIDENT'S ADDRESS[1]

was called for, and the President, speaking from the floor, asked that the address be taken as read. It had been printed in advance, and was now in the hands of all the members, so that no particular advantage could be gained by reading it; he hoped the Association would concur in taking it as read. No objection having been put as to such action, Chairman Tippy took the address as read and appointed, as

COMMITTEE ON PRESIDENT'S ADDRESS,

Messrs. H. L. Olds, Henry Douglass and V. F. Dewey, with instructions to consider the same and report thereon at their convenience.

President Lynn resumed the Chair and introduced Mr. Glenn R. Chamberlain, of Grand Rapids, Mich., who read a paper on

HOW WE DISPOSED OF OUR SURPLUS COKE.

As the heading indicates, it is not claimed that this paper is to be a "Handy Book of Reference for Gas Men on How to Sell Coke," but is merely a few notes on how the Grand Rapids Company marketed its surplus during the past season. The methods used were probably not original with us nor new to anyone. However, they seemed sufficiently effective to accomplish the sale of approximately 50 per cent., or 14,000 tons, more coke in our city during the past season than was sold the previous year. The coke surplus above referred to was due to two things:

1. Increased manufacture of coke by the gas company (6,000 tons).
(a) Increase of gas sales.
(b) Increase in per cent. of coal gas made.

1. For the text of the Address, see JOURNAL, *ante*, p. 721.

(c) Use of coal instead of coke under benches.

2. Importation of coke by fuel dealers (8,000 tons).

We have always had the assistance of the fuel dealers, about 45 in number, in disposing of our product, and in return we allow the dealer, large or small, a net differential of $1.50 below the retail price; the dealers' price being f. o. b. cars, or their wagons at our works, the retail price being a delivered price. This co-operation is naturally somewhat due to the fact they realize, as we do, that our entire make of coke must be sold in the community at some price. Hard coal always has been and always will be a favorite with the fuel dealer, and a fair price for coke means easy sailing for hard coal, while a low, uncertain price for coke means unstable prices and profits on hard coal. Usually, therefore, the fuel dealer is willing to help sell the gas company's product, but there is no question that all the sentiment in favor of coke must be created by the gas company, it being hard for the dealer to realize the fact that, in order to handle coke, he does not require an expensive yard for storage; in fact, really needs none at all, merely an investment in teams and wagons and an office to receive orders. He needs but very little capital, and does not have to invest in a big stock of fuel to carry in his yard several months before the fuel season opens, as is the case with hard coal, and he, therefore, does not have to lose the interest on the money so invested. He does not have to take chances with fire nor pay insurance on his stock nor stand for depreciation and possible chance of loss due to unforseen and unexpected reductions in the price of fuel, as the gas company carries the stock and all of these risks, storing the coke for the dealer, thus giving him an opportunity to pay for his coke as he sells it, usually after getting his money from the customer.

In our case, although we create the sentiment for it, 50 per cent. of our sales are made by the dealers to those of their hard coal customers who have been converted to coke and who naturally prefer to continue trading with the fuel dealer. The dealer, therefore, while not boosting very hard for coke, must carry it, and wants a steady supply of it for fear that if he doesn't supply his customers some other dealer may, and a customer once lost is usually gone forever.

For two or three seasons prior to last year we ran short before the season closed, and in spite of our assurance last year that there would be plenty of coke for all, as there would have been, each dealer loaded up on a quantity of cheap, summer, outside coke, about 8,000 tons in all, which put us up against the proposition of being obliged to convert a corresponding quantity of hard coal business to coke.

While on this subject of dealers, it might be mentioned that, up to last year, it was constantly being reported to us that, owing to delays at our yard, dealers' teams could not make as many trips a day with coke as they could with hard coal, and that preference in loading was given to gas company teams to the detriment of the dealer. Personal tracers sent after dealers' teams convinced us that this was not the case, but that most of the delays were in front of various saloons in that locality and elsewhere. We accordingly placed a time stamp in our coke office, giving each dealer on his memorandum of each load the time in and out, and since then not a complaint has been heard. Our daily make of coke being placed in chutes from which wagons are loaded by gravity, helps considerably in prompt service, the amount sold in excess of our daily make being forked up by teamsters with the aid of enough extra men furnished for that purpose to obviate any chance of congestion there.

The four methods used by us that obtained the bulk of our results were:

(1) Newspaper advertising.

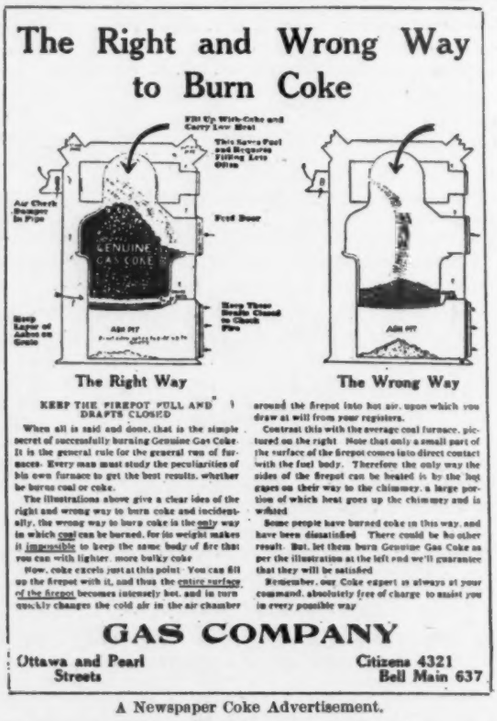
(2) House-to-house canvas and following up prospects by letter.

(3) Use of representatives in our office to talk coke during last gas bill discount days.

(4) Following up all sales to new users by representatives expert in using coke and instructing purchasers in its use.

In our newspaper work we used at least one advertisement from which could be traced good results, and that was an advertisement showing the right and wrong way to burn coke.

We secured our prospects through canvassing by a rather economical method, inasmuch as we began a general campaign of good service last fall by having our regular gas representatives in the residence districts, eight in number, and all "practical" men, call from house-to-house, covering the entire city, adjusting all appliances that were out of order, selling whatever appliances could be sold and noting on a special memorandum all prospects for coke as well as appliances, such as gas ranges, house pipings, water heaters, etc. As


The Right and Wrong Way to Burn Coke
The Right Way
The Wrong Way
KEEP THE FIREPOT FULL AND DRAFTS CLOSED
When all is said and done, that is the simple secret of successfully burning Genuine Gas Coke. It is the general rule for the general run of furnaces. Every man must study the peculiarities of his own furnace to get the best results, whether he burns coal or coke.
The illustrations above give a clear idea of the right and wrong way to burn coke and incidentally, the wrong way to burn coke is the only way in which coal can be burned, for its weight makes it impossible to keep the same body of fire that you can with lighter, more bulky coke
Now, coke excels just at this point. You can fill up the firepot with it, and thus the entire surface of the firepot becomes intensely hot, and in turn quickly changes the cold air in the air chamber around the firepot into hot air, upon which you draw at will from your registers.
Contrast this with the average coal furnace, pictured on the right. Note that only a small part of the surface of the firepot comes into direct contact with the fuel body. Therefore the only way the sides of the firepot can be heated is by the hot gases on their way to the chimney, a large portion of which heat goes up the chimney and is wasted
Some people have burned coke in this way, and have been dissatisfied. There could be no other result. But, let them burn Genuine Gas Coke as per the illustration at the left and we'll guarantee that they will be satisfied
Remember, our Coke expert is always at your command, absolutely free of charge to assist you in every possible way
GAS COMPANY
Ottawa and Pearl Streets
Citizens 4321
Bell Main 637

A Newspaper Coke Advertisement.

these reports were turned in from day-to-day, the coke prospects were noted on a separate card and within a week the prospect, which was nearly always a hard coal user, was written the following letter:

DEAR SIR: The heating value of a fuel is in proportion to the amount of carbon it contains.

Genuine gas coke is the highest grade of gas coal, with the smoke, dirt and other objectionable features removed. What remains is pure carbon—concentrated heat.

Hard coal costs you $7.95 per ton.

Coke costs you $5.94 per ton; actual saving per ton, $2.01, or 25 per cent.

Wouldn't you change to another grocer if you could save 25 per cent.?

You can add $2 to your savings account every time you buy a ton of our genuine gas coke for your furnace, stove or grate, in place of hard coal.

Genuine gas coke is easy to kindle, is smokeless, odorless, burns to a fine ash free from clinkers, and, ton-for-ton, goes as far as hard coal.

Some hard coal men have said that "Coke burns out the grates." This we guarantee to be absolutely untrue, if used according to the few simple directions furnished. This is proved by thousands who use it. Our man will call, free, and show you how to get best results.

Prompt service and good weight are our hobbies.

The coke we manufacture is the only "genuine gas coke" in Grand Rapids. Don't be satified with any other that the dealer tells you is "just as good."

We carefully prepare our coke in three sizes, furnace, stove and nut. Also we will furnish you any mixture you want. Tell us your use for it and we will furnish the proper size. All at the one money-saving price, $5.94 net per ton.

Such is the demand for coke that we have run short for the past 3 years. This year we have plenty for all, owing to increased manufacture, and we trust you will favor us with a trial order.

Yours very truly, GRAND RAPIDS GAS LIGHT COMPANY, Sec'y.

We learned from our coke department the names and addresses of all purchasers who had either never previously used coke nor had had difficulties with it, and to those—within 3 days after the sale and delivery of the coke at the premises—one of our three experts was sent, and at the end of 5 days the following letter was mailed, our idea in sending it being to make sure that the inspector had called and had rendered them satisfactory service, also to assure the customer that we were anxious to learn if the coke was satisfactorily meeting our claims for it:

Dear Sir: Recently we delivered to you a load of our genuine gas coke and, assuming that this is the first coke you have used, we had

one of our representatives call on you to furnish any assistance or advice you might desire in the proper use of it.

By following the instructions furnished for burning it this coke should give you the very best of satisfaction, and we will be glad to hear from you if any difficulty whatever is experienced.

Thanking you for the courtesies shown us, we are, yours very truly,

GRAND RAPIDS GAS LIGHT COMPANY, Sec'y.

The inspector used a card introducing himself, which contained short instructions for using coke, and could be used by the customer as a mailing card if he found it necessary to write us regarding the coke, as follows:

PLACE ONE CENT STAMP HERE.

GLENN R. DAVIS.

Genuine Gas Coke Representative
Grand Rapids Gas Light Company

(OVER.)

Directions for Using Coke.—1. Fill the fire box before the fire gets low. 2. Throw on all the coke you can—fill it up high. 3. The fire then requires feeding less often. 4. The only correct and economical way is to keep a large body of coke under a low fire, and not a small quantity under a hot fire. 5. Study the operation of your drafts and dampers, and learn to keep your fire steady—do not let it burn first fiercely hot and then very low. Do not allow your fire much draft. 6. When shaking, stop as soon as hot coals appear, thus always keeping a layer of ashes on the grate. 7. To steady the fire or to "bank" it for the night, cover over with fine coke.

Grand Rapids, Mich.....190

Grand Rapids Gas Light Company:

Please send your "Coke man" to my residence, No..... Street Ave. to advise with me regarding the use of your Genuine Gas Coke, especially regarding.....

.....

.....

Signed.....

Fuel user.

Notice.—Observe the simple directions on the back of this card for using Coke and you'll say it's the best fuel you ever used.

Thousands of people in this city use our Genuine Gas Coke with both pleasure and profit, and so you can.

Call Citizens' phone 6127, or tear off and mail the attached card if any trouble whatever is experienced.

(OVER)

Two Sides of a Folding Card Delivered by Inspectors.

The inspector's duties were not merely to inquire whether they could run their furnace with the coke, but he gave them a practical demonstration of how to operate the drafts and dampers, how much coke to throw in at a time, and why a large quantity was better and more economical than a small quantity, how and when to shake the fire, and why it is best to leave a layer of ashes on the grate, and not allow ashes to pile up under the grate. This follow-up system was by far the best feature of our entire campaign, as a customer once gained was held. We have learned that money spent in getting new customers is practically wasted without this follow-up service, as reliable statistics will show that not more than from 10 to 15 per cent. of the new customers will stay by it long enough to learn how to properly use it.

Certainly the result of all of this attention was most gratifying, as the following reports from the new users secured during this period will show: Of the total number of new customers gained by the gas company—and we did not attempt to trace up new customers gained by the fuel dealers, all of which was due to our advertising and soliciting; 82 per cent. gave us repeat orders, showing their intention to continue its use; 13 had a supply of our coke still on hand on the second call of our inspector, but said they would order coke again, as they were satisfied with it; 2 per cent. we lost account of because of their having moved; 2 per cent. had returned to the use of hard coal; 1 per cent. had returned to the use of soft coal on account of the higher price of coke.

Our arrangements for handling coke during the season were the same as those under which hard coal was sold, our retail price starting May 1, and increasing 10 cents per ton for 5 months, the customer ordering and paying for his winter's supply during any month he desired; the understanding being that we were to be allowed to fill his bin during the summer and the balance to be delivered as required by him during the winter.

Our arrangements for the present and coming season, however, are to make the consumers' price on a sliding scale, beginning May 1, as last year, but only selling at the summer price what the customer actually put into his bin during the summer. We also offered the dealer a special price on coke shipped into his yard by cars, provided he placed his order and paid for it during May for the number of cars he could store, allowing us to ship it at our convenience during the summer. Under this arrangement we have sold and delivered to the dealers this summer, loading it directly into the cars as it is made, about 4,000 tons.

Discussion.

The President—The interesting paper just read by Mr. Chamberlain is well worthy of discussion. A number of our members pay particular attention to this branch of the business, and I will call on some of them for a discussion of this paper. Mr. Blauvelt, of the Solvay Process Company, of Detroit, is here. He handles much coke for both domestic and manufacturing purposes. Will he discuss the paper?

Mr. Blauvelt—Our proposition is quite different from that of the ordinary gas company's, for our domestic coke is manufactured principally as a by-product in the manufacture of metallurgical coke. It is our effort to make as little domestic coke as possible, because foundry coke is a more profitable product. I may say the problem for the Solvay Process Company, in the disposing of its coke, was solved by the anthracite coal strike. When consumers could not get any fuel but coke, they took to it and have kept us cleaned out of domestic coke ever since, save last summer, when slack times in the iron industry made it necessary for us to stock a large quantity of coke which was sold eventually as domestic. I believe the market for domestic coke has never anywhere near been saturated in Michigan. As long as anthracite coal is brought here in considerable quantities, and as long as a given number of heat units, in the form of anthracite coal, costs from 20 to 45 per cent. more than the same number of heat units in the form of coke, we should realize higher prices for it. It is necessary this campaign of education, calling the attention of domestic consumers to the proper method of realizing high heat value from coke should be followed up, and eventually the difference in price between anthracite and coke will be greatly reduced and the two different fuels will sell more nearly on their heat value basis. In this connection I would like to say to you, on behalf of the furnace and stove manufacturers, they are now building stoves and furnaces with much larger fireboxes far better adapted to the use of coke than the furnaces developed primarily for the use of anthracite coal. The latter had small fireboxes and were objectionable also because the coke had to be fired too frequently. In the new designs brought out that difficulty has been surmounted.

Mr. Graf—We had completed a new coal gas works in Indianapolis, and had I suppose 7,000 to 8,000 tons of coke on hand with no market. We were turning it out at a rate of 150 tons a day. The business was all in the hands of outside competitors. Several attempts were made to get coke out through the dealers, who told us to mind our own business, so we had to make our own market, which we did by dropping the price to $3.75, delivered. That was in May. We spent $3,000 in advertising, sent out solicitors and cleaned out all our surplus, and the first year had to import coke. We sold 20,000 tons that year. Dealers, becoming wise, came to my office instead of my going to theirs, and we are now selling our coke. For the last two years 75 per cent. has been sold by the dealers. They pay us our price for our coke in wholesale lots, and they name the selling price. At the present time they pay us $3.75 in carload lots and sell it for $4.75, so they don't even make teaming out of it. That will only last a short time. They have been satisfied with $1 per ton profit, which is very moderate. Our coke pile at the present time only contains 1,000 tons, so we shall run short this winter. I agree with Mr. Chamberlain that it is a good thing to "get in" with the dealers. Give them a reasonable profit, have them give you your price, and let them fix the selling price. While we were in our contest one of our clerks called up about 20 of the dealers, asking for Indianapolis gas coke, and the bad things they said are worth recording. This field is now practically ours entirely.

Mr. Douglas—From the paper and from the remarks so far made in the discussion it is shown that a home market can be created, as I have always contended. Many of our coke troubles were due to competition from outside sources. This can be eliminated if every company does its best to sell its own coke at home. I think, by constant pushing, giving good service (and good coke above all things), dry coke and clean, a good business can be built up. I have a little more to say, but prefer to say it after Mr. Wyman reads his paper.

Mr. Shacklette—Like many others I have had considerable trouble in our small plant with people who like to ship coke into Adrian at a cheap rate from Cleveland or Cincinnati. Some years ago we started a scheme similar to the one Mr. Chamberlain worked this year, and used a sliding scale of prices to the dealer and to the consumer. Last year several of the dealers thought they could get more advertising value by selling foreign coke, which they did. This year we went after them a little harder. We lined up every dealer in the city and placed many domestic orders for delivery through the summer, and subsequently in the winter. On the 10th of June we had, I think,

between 35 and 50 per cent. of our coke sold of the year's output; and the money was in the bank.

Mr. Waterbury—We get $5.75 for our coke and pay 75 cents for having it delivered. We increased the price this summer and it was all sold out in the spring. Hard coal sells for $7.25.

Mr. Fraser—It is not so much a question of selling more coke in Michigan as it is of getting better prices. We can sell all our coke, but we should get better prices than we do. Two or three years ago we had trouble in selling coke at $5 per ton, but we have been able this year to get as high as $6.25. No one should sit down and rest while he is selling his coke for $5.50. We should get $6 at least for our product.

Mr. Eaton—One trouble I have had is what to do with the breeze. Most people use it in their boiler plants, but we cannot do this at Saginaw, so the question is how to use the breeze. We think the thing to do is to use it for banking fires. We sell it for only $2 a ton, and the demand has been increasing wonderfully. Two of our domestic users were using 14 or 15 tons of coke, about half of which would be breeze. Where they use 10 tons they use 3 or 4 tons of breeze, and the price can be increased as you get the demand. We have to contend with soft coal, which they sell in Saginaw at $2.25 a ton, and wood for less than $1 a cord; but on the 1st of May we had no coke. It is a question of making the price. The prospects this year are that the coke stock will be out long before we expect. The breeze question is what I wish to bring out. Of course, some companies in the State get a considerably higher price than $2.

Mr. Schaddelee—In my experience you can educate people so that they wont even take soft coal at $2.25 a ton when they can get coke. Starting in to educate people to use coke the question of soft coal enters very largely. Everybody can get wooden shoes probably cheaper than they can get leather shoes, but everyone uses the leather shoes because they like them better, and because of the greater comfort. So it is with soft coal and coke. Educate the people to the point where they understand coke, and only the very poor people would use soft coal on account of the price, even if they had to pay three times the price for coke that they had to pay for soft coal.

Mr. Shacklette—I agree on the price question. If Cleveland and Cincinnati people can ship coke into our towns at a certain price, it is a question of selling it for what it is worth, and that is based on what some other fellow will sell the same thing for. Our net retail price ran from $4.52, May 1st, to $4.99, October 1st. We are selling all our breeze except that which we use under the boilers at $3 per ton. None is ever left in the yard.

Mr. Tippy—Mr. Chamberlain laid great stress on the result for following up new customers, or the old ones who do not understand how to use coke aright. I think that was one of the very good things in our campaign of last winter. We put as much attention on teaching people how to use coke after they had it in the cellar as we did on obtaining them for customers, with the remarkable result that we held nearly all our coke customers and secured a number of new customers who had previously tried coke, but had always given it up because they could not get good results. They likely would throw in a small quantity at a time, and have a fierce fire for a while, then let it die out and have a cold house. We gave a great deal of attention to that work, urging them to fill the furnace and to regulate the dampers carefully, all of which contributed to the results.

Mr. Schaddelee—It is not a question of selling coke, but of educating people how to use it. I had experience in making a coke market. I started on Main street, and tackling the very first man I came to—he was heating his store with a large stove. I talked coke to him for a while, then he laughed at me, saying: "I have a ton of coke in the cellar that was given to me a year ago; I will give it to you for nothing if you will take it away." Within a few weeks I was selling him a ton of coke every week, and getting the price for it, too. He did not know how to use it, but when he was taught how to use it to the best advantage you could not sell him any other fuel. That is what gas companies should follow closely, so that their customers may know how to use coke to keep a steady fire and a warm house.

Mr. Knight—I do not understand why the dealer is entitled to any profit on the coke that is sold in a town. Why not give the benefit of that dealer's profit to the consumer?

The President—That is on exactly the same lines that you have traveling men on the road selling your goods.

Mr. Douglas—We are coming to the point where we won't do that. When we get the public educated where there is a demand for coke in excess of the ability of the gas companies to produce it (we will reach that point some day), then the dealer can buy his coke outside. The only reason we give dealers a price now is to keep outside coke out.

The Secretary—In the larger cities greater complications come up regarding the handling of coke than those that arise in smaller ones. In the former the dealers are more powerful, not only financially but in the number of men employed. Take Detroit as an example. Should we antagonize the dealers we would have 200 men out knocking our product, and we are a public service corporation. We need their friendship and goodwill more than we do the little extra profit on the coke, and the way things look now to me co-operation of the dealer is essential.

Mr. Graf—I back up Mr. Ewing on that. I found it so in our case, and it is so everywhere. If the consumer wants fuel the natural thing for him is to go to the dealer who will sell him anything he handles. If he is knocking one coke he certainly will not sell him that. It is our experience that it is better to get the goodwill of the dealer.

Mr. Graves—Will Mr. Ewing explain how they disposed of coke in Detroit, after they showed the consumer how to use it, and how they disposed of their breeze.

Mr. Ewing—Our system does not differ materially from that employed in Grand Rapids. As far as breeze is concerned, we used a paper bag that will contain about 40 pounds of breeze. This bag was marked "Breeze for banking fires," and on each ton of fuel that left our works we put a 40-pound bag of it that formed part of the ton. The wagon will ordinarily have about 40 pounds in its bottom, and instead of shoveling that off on top of the coke, causing it to look dirty, we left that breeze in the wagon and delivered an equal amount in the bag marked "Breeze for banking fires." We did not solve any breeze problem that way. Our effort was to get a clean ton of coke in the man's cellar. Like everything else, the first impression is that which makes us part with our money. If coke looks good to a man he will give more effort and attention to making it work well.

Mr. Chamberlain—I don't know there is anything I care to speak of regarding this discussion, except to emphasize the point by Mr. Douglas, that you can make any size market you want right at home. Last year we sold 42,000 tons in a town of 100,000 inhabitants, and I wish I had 50 per cent. more than that this year. We started selling our surplus late this season. We did not know the dealers would throw us down the way they did until the season was far along. I feel that we can sell at least 50 per cent. more this year, because we know we are going to run out. There is no limit to the amount of coke you can sell as long as any hard coal is used.

On motion of Mr. Frazer, seconded by Mr. Knight, a vote of thanks was tendered Mr. Chamberlain for his interesting and valuable paper.

(To be Continued.)

Items of Interest
FROM VARIOUS LOCALITIES.

"An installation of 24 gas arcs of the Humphrey type, recently made in the shops of the Packard Motor Company, of Detroit, Mich., displaced an installation of Nernst lamps, and 64 gas arc lamps were a week or more ago put up in the new plant of the Cadillac Motor Company, which rather goes to show that shop lighting can be best and most economically done by high power gas lamps. Another thing that was recently shown to Detroiters was a working demonstration of a motor truck for delivering coke. The net result seems to be that 16 tons of coke would be delivered in 1 day under the new mode, or practically the motor did the work usually done by 3 teams. —L."

Mr. J. H. Cline and associates are proposing to construct and operate a gas works in Concordia, Kas. He is prepared to furnish details.

The proprietors of the Poughkeepsie (N. Y.) Light, Heat and Power Company will expend a sum somewhere near $100,000 on plant reconstruction.

The Moreau Gas Fixture Company has been awarded the contract for furnishing the gas and electric fixtures necessary for the lighting installation that is to be made in the new Court House at Youngstown, O.

A correspondent in Milwaukee, Wis., forwards the following: "Successful tests were made last month in a factory in this city, where 18 girls are employed on sewing machines ranged alongside a table 45 feet in length. The test that was most satisfactory was afforded by the employing of 6 reflex Welsbach lamps, located 22 inches above the surface of the table, the lamps being spaced 5 feet apart. An official of the Milwaukee Company, when questioned about this means of factory lighting, remarked: 'The quality and distribution of the light are such as have never before been obtained with any other artificial lighting medium, quality, quantity and cost being the determining factors. We find it advisable and profitable to consult with our customers, as a doctor would do with his clients. We experimented successfully with the inverted lamp, to provide concentrated light over machines. In many factories, on the other hand, certain regions should be flooded with strong, clear, steady light. Over large machines, for instance, or where the work spreads over some ground, we find that a large, powerful unit, such as the Humphrey gas arc lamp, is best suited to this purpose.'"

Mr. Albert Stritmater, Secretary of the National Gas and Gasoline Engine Trades' Association, informs us that the annual meeting of the Association will be held in Chicago, November 30 and Decem-

ber 1st and 2d. Headquarters have been reserved at the La Salle Hotel.

MR. R. C. CONGDON, Manager of the Atlanta (Ga.) Gas Light Company, evidently knows something about thoroughbreds, for he actively and successfully acted as Chairman of the Horse Show Committee on Local Entries in connection with the formal equine show in that city. It is an office that is held annually, and is very dear to the hearts of the fair and the brave of that beautiful Southern city.

"W. T. F.," sends this under recent date: The net earnings of the Jacksonville (Fla.) Gas Company, for the half year ended March 31, 1909, amounted to $43,712, and the net and gross show substantial gains. The total output for 1908 was 98,670,400 cubic feet against 70,989,000 cubic feet in 1907, and 50,589,000 cubic feet in 1906. Meters in use December 31 last were 4,370, against 3,315 in 1907, and 2,402 in 1906. There were 54 miles of mains in service December 31 last, against 46 in 1907 and 37 in 1906. The rates are: Highest, $1.30 per 1,000; lowest, $1. The net income for the 3 comparing years was: 1906, $34,016; 1907, $48,887; 1908, $64,851. These figures were brought out through an offering of bonds, part of a total authorized issue of $2,000,000. Of that amount $824,000 have been placed. This is a pretty good showing for a Company the entire worldly possessions of which could have been purchased less than 20 years ago for $150,000."

A CORRESPONDENT in Richmond, Va., writing under recent date, incloses the following respecting one phase of the situation in Wheeling, W. Va., which is quite worthy the close attention of those who have some thought of employing experts to let them know just what is needed in respect of constructing new plants or overlooking old ones, that may be in need of complete reconstruction rather than to submit the latter to a patching process: "There are indications leading to the belief that the proposed improvements to city gas plant of Wheeling are going to be further delayed. At a recent meeting of the City Council the Board of Control requested authority to employ a competent gas engineer to prepare plans and specifications for the rehabilitation of the plant. The request was granted, with a string to it in the shape of a provision that not more than $500 should be expended in securing such service. Now, though, the Board is up against a stiff proposition to secure a competent man for this compensation; indeed it is extremely doubtful if a trustworthy man can be found who will be willing to undertake the task at the figure named. High grade gas engineers are hard to find, and when found will not engage themselves on low or tentative figures, hence the thought of delay in beginning practical work in connection with the redemption of the Wheeling plant. The latter has been inspected by two or three gas engineers, but none of these would undertake the task for any sum like $500. The matter may or may not be presented to Council at the next meeting, but in any event it is not likely that anything definite will be said or done until actual figures for handling the job have been handed in by competent experts. When the said issue was voted by the people, $175,000 was set apart for the rehabilitating or rejuvenating the gas plant. It may safely be taken for granted, however, that nothing can (or should) be done until the services of an engineer who thoroughly understands the proposition can be secured."

"F. L. B.," writing from Laramie, Wyo., under date of the 15th inst., says: "Dear JOURNAL—Messrs. Joseph Stern and Joseph Maniers, both of Denver, Col., have accepted the terms under which the authorities will allow them to construct a gas plant in this place. The franchise is to run for 25 years, and the grantees assert that construction work will be underway prior to the New Year."

MR. J. L. KELLY has been elected Treasurer of the Chattanooga (Tenn.) Gas Company, vice Mr. R. W. Harbor, resigned.

MR. E. E. HOLLAND has been appointed attorney to the Suffolk (Va,) Gas and Electric Company. The lawyers seem the only sort of men who have been at all fairly well paid by this corporation since it went into commission.

THE State Board of Equalizers, having heard and sifted the evidence submited by the Memphis (Tenn.) Gas and Electric Company, have finally decided to allow the assessment as originally fixed ($2,000,000) against the corporation to stand, in place of the early determination this year to increase the footings by over 100 per cent.

THE dollar rate is now in effect in the various districts supplied with gas by the Wilkes-Barre (Pa.) Gas and Electric Company.

MR. J. A. HASLETT, formerly of Mobile, Ala., has actually assumed the duties of Sales Manager for the Mount Clemens (Mich.) Gas Light Company.

MR. HERMAN BURGI, who has been Consulting Engineer for the Springfield (Mass.) Gas Light Company, has been appointed General Superintendent of gas manufacture for the several Companies operated by the Tenney syndicate. Mr. Burgi is also to act as Superintendent of the Springfield Company, Mr. Bill remaining as Assistant Superintendent.

ON the 9th inst. United States Circuit Court Judge Ray decided that the Hudson River Electric Company, the Saratoga Gas, Electric Light and Power Company, the Hudson River Power Transportation Company and the Madison County Gas and Electric Company may not be adjudged bankrupts. The opinion denies the petition of the creditors of these Companies and upholds the contention of their Receivers that, as a public service corporation, the Companies come under special laws regarding bankruptcy proceedings. Action was brought by creditors to have the subsidiaries of the Company declared bankrupt, and arguments to that effect were heard before Judge Ray last July. The decision will naturally aid in clearing up matters in connection with the bankruptcy of the parent Company.

AT the annual meeting of the shareholders in the Lancaster (Pa.) Gas Light and Fuel Company the Directors elected were: W. W. Griest, P. B. Shaw, Chas. B. Keller, H. C. Schock, D. A. Howe, W. B. Bansman, J. F. Sener, E. S. Snyder, John Hertzler, C. E. Titzel, R. S. Storrs, R. E. Griscom, T. C. Detweiler, Geo. Bullock and P. E. Slaymaker.

MR. VALLEY SMITH, for quite some time in the employment of the Torrington and Winchester (Conn.) Street Railway Company, has been appointed Sales Manager for the Mohawk (N. Y.) Gas Company.

"C.," WRITING from Greeley, Col., under date of the 1st inst., says: "A new oil and gas gusher was recentiy struck about 6 miles east of Boulder, Col. The flow of gas as estimated runs between one to two million cubic feet each 24 hours, all of which is going into thin air, for the purpose of getting the oil. The only reason I could find for this criminal waste is in the fact that the oil output is worth $500 to $800 per day, whereas the gas is worth only about $200. Both could, however, be saved and utilized, but the only ambition of the owners seems to be of the get-rich-quick type. When you think of the wilful destruction of our natural resources, such examples are enough to cause one to boil over; but, as the Indian says, 'White man spoil any country.'"

WE are in receipt of copies of the Bristol Company's latest "Bulletins," respectively, Nos. 108 and 115. These "Bulletins" are devoted especially to making plain the applications of the W. H. Bristol type of electric pyrometers of processes for the heat treatment of steel. No. 108 deals especially with the application of pyrometers for hardening and tempering furnaces, showing the type of instrument recommended, and the method of applying the patented form of thermo-couples to the most generally used kind of hardening furnaces. The other one (No. 115) has to do with the application of electric pyrometers to furnaces for annealing and case hardening. In these lengthy processes it is all the more important to use the recording pyrometers than in the tempering furnaces. Write to Mr. H. L. Griggs, Sales' Manager, the Bristol Company, Waterbury, Conn., if you care to go further with this. We make no doubt he will be pleased to forward without charge the "Bulletins" above noted.

THE Northwestern Corporation, of Portland, Ore., has ordered the North Yakima Gas Company, of North Yakima, Wash., to alter its title to that of the Northwestern Corporation of North Yakima. The gas business in this far away Northern spot is growing with great rapidity. In fact the outlook is such that it will again have to increase its generating capacity.

MR. WARREN HELLEN, of Waterloo, Ia., has been appointed Cashier to the Wilmington (Del.) Gas Company.

A RECENT issue of the Chester, Pa., *Times*, contained the following: "The Philadelphia Suburban Gas Company is getting matters in shape to start up twenty more coke ovens at the foot of Highland avenue in the western section of the city. The ovens have been opened up and the brick placed on the ground to make the necessary repairs. The starting up of the extra ovens, however, depends upon the starting up of the blast furnaces at the Tidewater plant. As one of the evidences that the Tidewater plant will be shortly put in operation it is hardly possible that the Gas Company would go to the expense of getting such a large number of ovens in readiness unless they had some assurance that the furnaces at the Tidewater will start shortly."

THE AMERICAN GAS LIGHT JOURNAL

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MONDAY, OCTOBER 18, 1909.

The Market for Gas Securities.

The market for city gas shares was dull, in fact, decidedly drooping, during the week, in spite of the extra illuminative effect that should have been exerted by the dazzling display of artificial lighting in the greater city during the Columbus celebration. Consolidated opened to-day (Friday) at 142¼ to 142½. There was no stock in sight, however, so the situation is nominal.

Brooklyn Union is quoted at 142½ to 145. Its sendout is increasing at an amazing rate. Peoples, of Chicago, is reasonably firm, and the demand that arose in September for Massachusetts Companies' issues continues.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

OCTOBER 18.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$78,177,000	100	143¼	143½
Central Union Gas Co. —				
1st 5's, due 1972, J. & J.	8,000,000	1,000	98	101
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	2,500,000	100	155	165
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101¼
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	42
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	100	101
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	104	107
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	—	75
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	142½	145
1st Con. 5's, due 1948, M. & N.	15,000,000	—	91½	92
Yonkers	299,650	500	130	—
Out-of Town Companies.				
Bay State	50,000,000	50	1	1½
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	500,000	1,000	90	96
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	73	73½
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,600,000	1,000	104	106½
Cincinnati Gas and Electric Co.	20,500,000	100	92	93
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt & Heating Co.	1,632,750	100	90½	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	—	105
Mortgages, 6's	3,600,000	—	—	118
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	458,000	—	102	105
Detroit City Gas Co	5,000,000	50	—	50
" Prior Lien 5's	4,619,000	1,000	97	100½
Detroit Gas Co., 5's	381,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	112	113½
" Bonds, 5's	10,500,000	—	108	108½
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis.	10,000,000	100	104	105
Preferred	2,500,000	100	—	98
Bonds	10,000,000	1,000	104	—
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,370,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	350,000	1,000	106	108½
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies, of Boston	25,000,000	100	69½	70
Preferred	25,000,000	100	95	96¼
Montreal Gas Co., Canada	2,000,000	100	218	218½
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	5,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	115½	115¾
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—				
1st Mtg. 5's	751,000	1,000	100	102
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgages, 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112¾	115
General Mortgage, 5's	2,445,000	1,000	90	95
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	100	104
Washington (D. C.) Gas Co.	4,600,000	20	352½	357½
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	220	—

Advertisers' Index.

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DIVIDEND NOTICE.

AMERICAN LIGHT AND TRACTION CO.,
40 WALL ST., NEW YORK CITY, Oct. 5, 1909.

The Board of Directors this day declared from the net earnings of the Company the regular quarterly dividend of one and one-half per cent. (1½ per cent.) on the preferred stock of this Company, payable November 1, 1909, to stockholders of record of preferred stock at the close of business October 20, 1909. The Board also declared, from the undivided profits of the Company, the usual quarterly dividend of two per cent. (2 per cent.), on the common stock of the Company, payable November 1, 1909, to stockholders of record of Common Stock at the close of business October 20, 1909. The Board also declared, from the undivided profits of the Company, a dividend of two and one-half (2½) shares of common stock on every one hundred (100) shares of common stock outstanding, payable on or before November 15, 1909, to stockholders of record of common stock at the close of business October 20, 1909. The transfer books for both preferred and common stock will close October 20, 1909, at 3 o'clock P.M., and will reopen November 1, 1909, at 10 o'clock A.M.

1793-1 C. N. JELLIFFE, Secretary.

WANTED,

Engineer to Superintend Construction of Large By-Product Coke Oven Plant, Including Recovery Apparatus.

Must be thoroughly first-class man with experience, covering oven design and erection. Immediate connection.
Address, "FUEL,"
1792-2 Care this Journal.

Wanted at Once,

Gas Works Engineer with Good Commercial Training,

To undertake the management of a new fuel and gas project. Offices in New York. Reply, giving references and salary expected for half his time and for full time. Only parties of experience need apply. Good opening for right man. Address, "NO. 447."
1793-2 Care this Journal.

WANTED,

Water Gas Operator for Small Western Plant.

One who can make repairs to apparatus and also do pipe fitting. Wages, $75 per month. Address, stating experience and qualifications,
1793-2 "OPPORTUNITY," care this Journal.

WANTED,

Retort House Foreman for Coal Gas Plant.

Applicant must be fully capable of operating plant sending out 35,000,000 cubic feet.
Address, "RETORT,"
1794-2 Care this Journal.

WANTED,

Either an experienced salesman or a man of good address who is familiar with the design, construction and operation of coal gas benches, to travel for first-class bench builders. State age, experience and salary expected. Address, "X. Y. Z.,"
1791-tf Care this Journal.

WANTED,

A Man who is Capable of Taking Full Charge of a Gas and Electric Plant

In a small town in New York State, making water gas. Must understand the manufacture and distribution of gas and electricity thoroughly. State qualifications and salary expected. Address, "W. C.," care this Journal.
1791-4

FOR SALE,

One Set of "Xing's Treatise on Coal Gas."

Three volumes. Edition 1882. Price, $100.
Address,
AMERICAN GAS LIGHT JOURNAL,
42 PINE STREET, NEW YORK CITY.

FOR SALE,

One set of 4 purifying boxes 12 feet 8 inches by 10 feet 9 inches by 3 feet, in good condition, with centerseal and 10-inch connections. Also one American 8-foot station meter.
1771-tf YORK GAS CO., York Pa.

FOR SALE,

118 Improved Lamp Frames, Burners, Globes, Domes, Tops,

Used three years in city of Richmond, Ky., for gas street lighting. Model 18, made by the Cleveland Street Lighting Company, of Cleveland, O
Address, B. R. DOHERTY,
1791-4 Supt. Richmond Water and Light Co.

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. CUNNINGHAM,
ELBERT P. CALLENDER,
EDITORS.

CHARLES H. WADELTON,
MANAGER.

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AGENTS:

New York—American News Company, 39 and 41 Chambers street.

Germany—Lemcke & Buechner, of New York.

England—Aug. Siegle, 30 Lime street, London.

MONDAY, OCTOBER 18, 1909.

The Market for Gas Securities.

The market for city gas shares was dull, in fact, decidedly drooping, during the week, in spite of the extra illuminative effect that should have been exerted by the dazzling display of artificial lighting in the greater city during the Columbus celebration. Consolidated opened to-day (Friday) at 142¼ to 142½. There was no stock in sight, however, so the situation is nominal.

Brooklyn Union is quoted at 142½ to 145. Its sendout is increasing at an amazing rate. Peoples, of Chicago, is reasonably firm, and the demand that arose in September for Massachusetts Companies' issues continues.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

OCTOBER 18.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$73,177,000	100	142¾	142⅞
Central Union Gas Co.—				
1st 5's, due 1913, J. & J.	3,000,000	1,000	98	101
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	2,500,000	100	155	165
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	100	101
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	104	107
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	—	75
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	142½	145
1st Con. 5's, due 1948, M. & N.	15,000,000	—	91½	92
Yonkers	299,650	509	130	—
Out-of Town Companies.				
Bay State	50,000,000	50	1	1½
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	509,000	1,000	90	96
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	73	73½
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,660,000	1,000	104	105¼
Cincinnati Gas and Electric Co.	29,500,000	100	92	93
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt & Heating Co.	1,682,750	100	90½	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	—	105
Mortgages, 6's	3,600,000	—	—	118
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	458,000	—	102	105
Detroit City Gas Co	5,000,000	50	—	50
" Prior Lien 5's	4,619,000	1,000	97	100½
Detroit Gas Co., 5's	881,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	112	113½
" Bonds, 5's	10,500,000	—	108	108½
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis	10,000,000	100	104	105
Preferred	2,500,000	100	—	98
Bonds	10,000,000	1,000	104	—
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	350,000	1,000	106	108½
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies, of Boston	25,000,000	100	69½	70
Preferred	25,000,000	100	95	95½
Montreal Gas Co., Canada	2,000,000	100	218	218½
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	115½	115⅝
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¼	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—				
1st Mtg. 5's	751,000	1,000	100	102
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgages, 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112¼	115
General Mortgage, 5's	2,465,000	1,000	90	95
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	100	101
Washington (D. C.) Gas Co.	3,000,000	20	352½	357½
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	230	—

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DIVIDEND NOTICE.

AMERICAN LIGHT AND TRACTION CO.,
40 WALL ST., NEW YORK CITY, Oct. 5, 1909.

The Board of Directors this day declared from the net earnings of the Company the regular quarterly dividend of one and one-half per cent. (1½ per cent.) on the preferred stock of this Company, payable November 1, 1909, to stockholders of record of preferred stock at the close of business October 20, 1909. The Board also declared, from the undivided profits of the Company, the usual quarterly dividend of two per cent. (2 per cent.), on the common stock of the Company, payable November 1, 1909, to stockholders of record of Common Stock at the close of business October 20, 1909. The Board also declared, from the undivided profits of the Company, a dividend of two and one-half (2½) shares of common stock on every one hundred (100) shares of common stock outstanding, payable on or before November 15, 1909, to stockholders of record of common stock at the close of business October 20, 1909. The transfer books for both preferred and common stock will close October 20, 1909, at 3 o'clock P.M., and will reopen November 1, 1909, at 10 o'clock A.M.

1793-1 C. N. JELLIFFE, Secretary.

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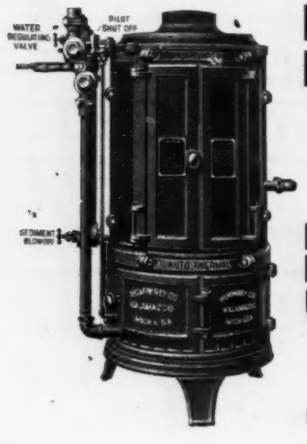

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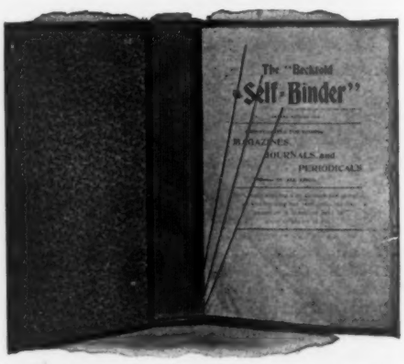

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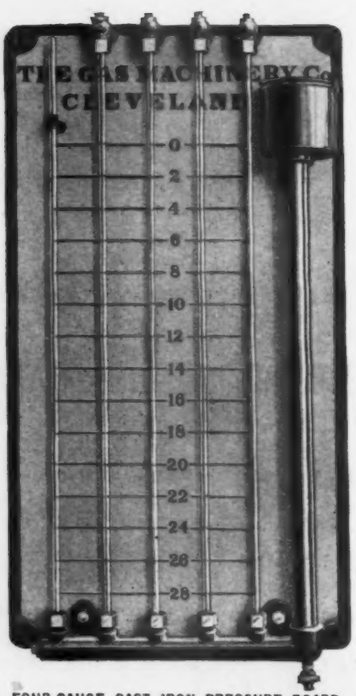

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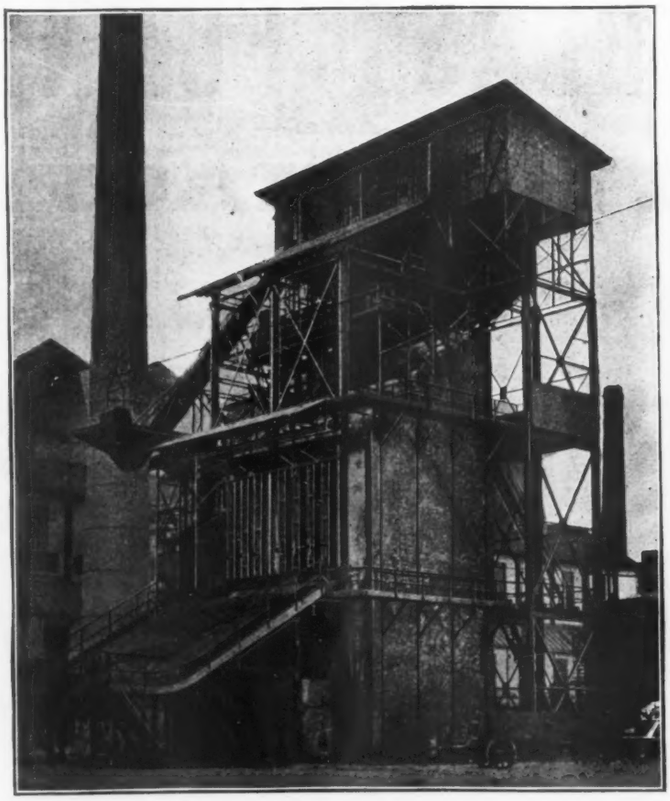

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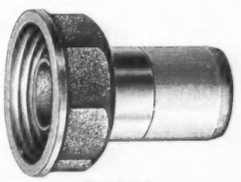
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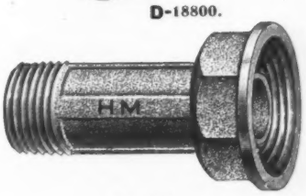
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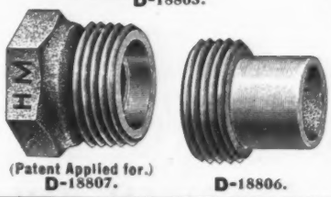
(Patent Applied for.)
D-18808.

(Patent Applied for.)
D-18804.

D-18802.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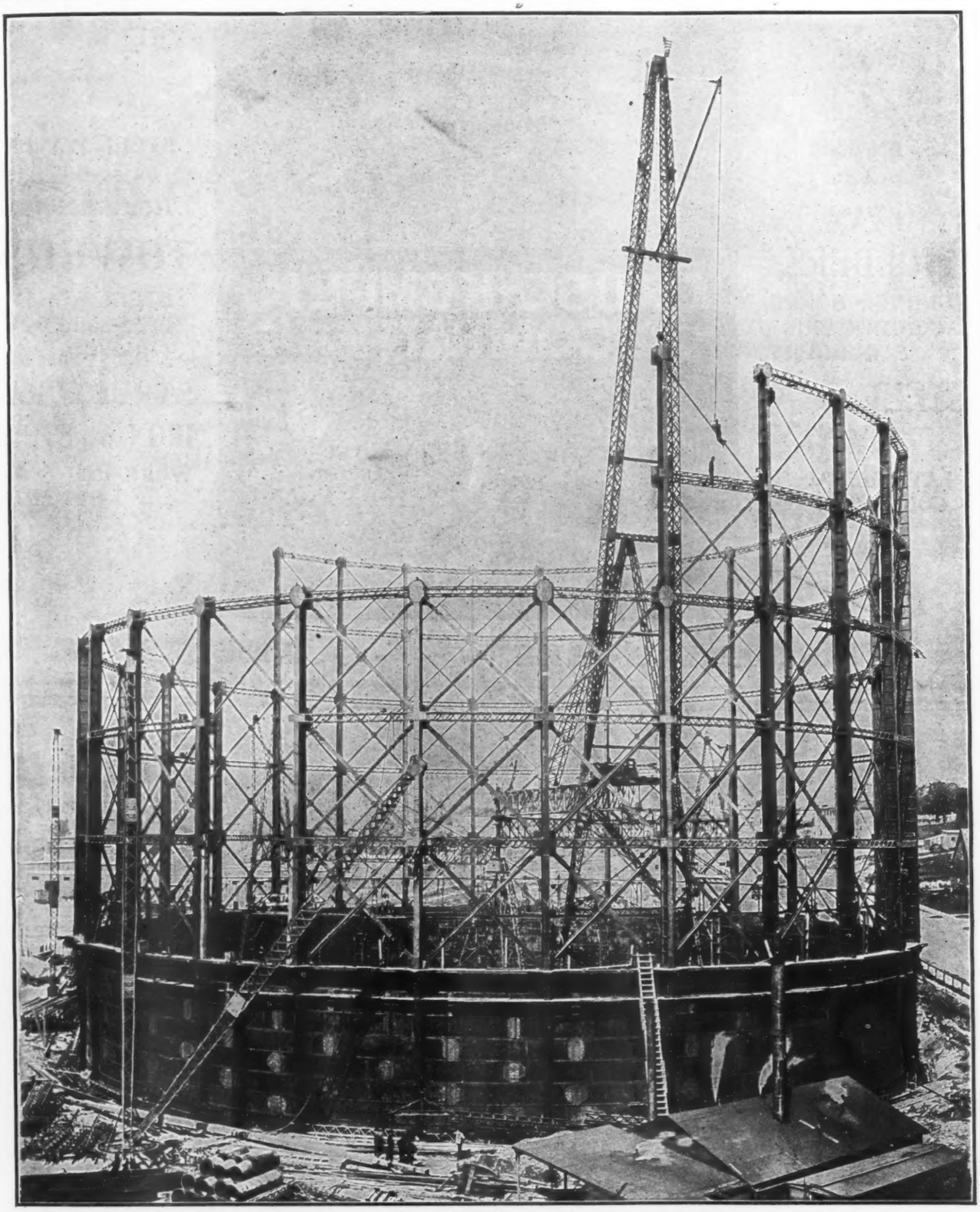

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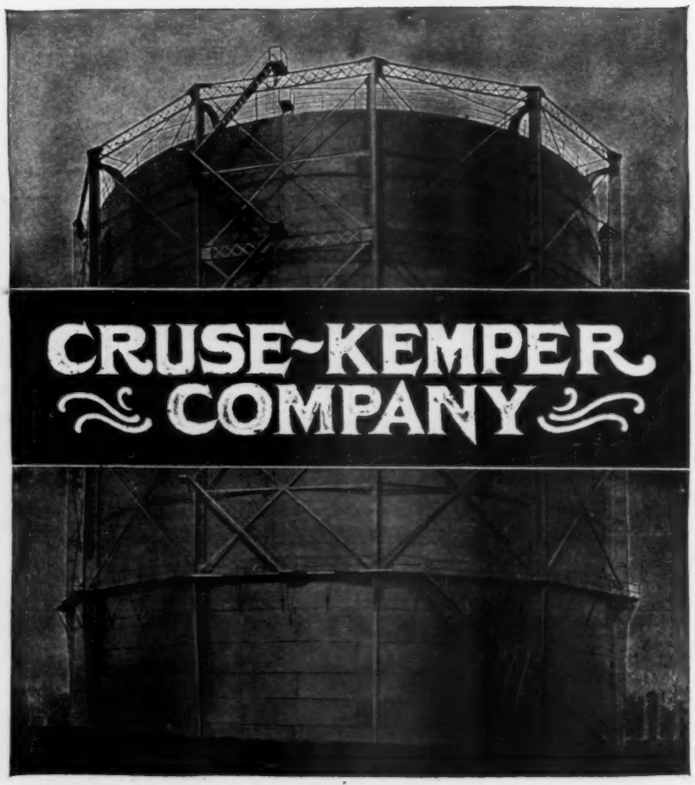

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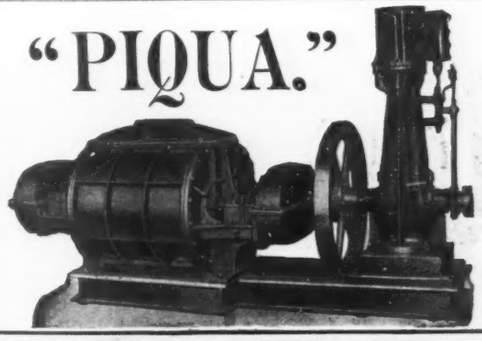

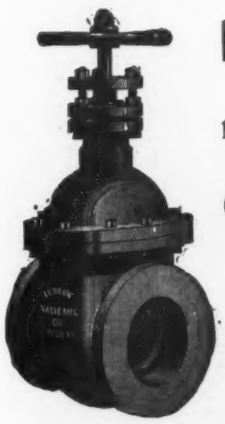

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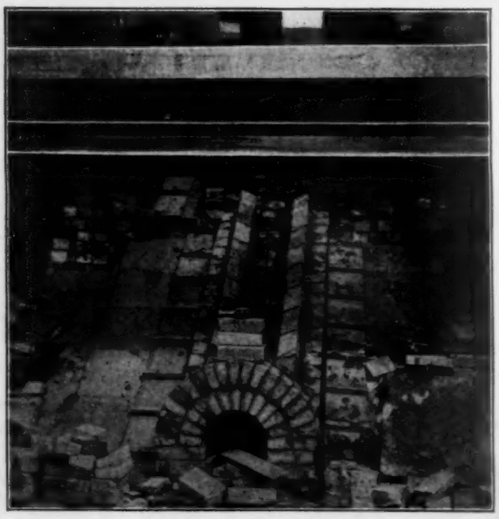

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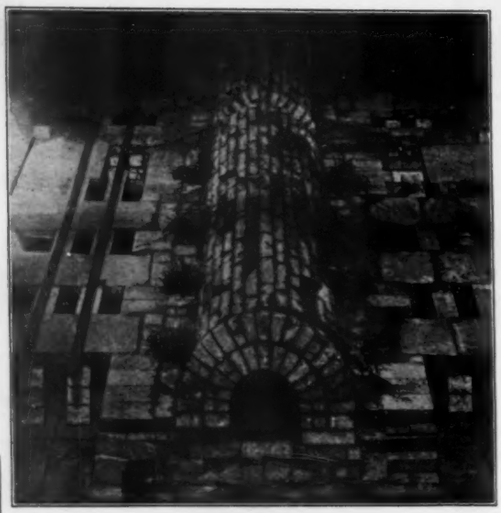

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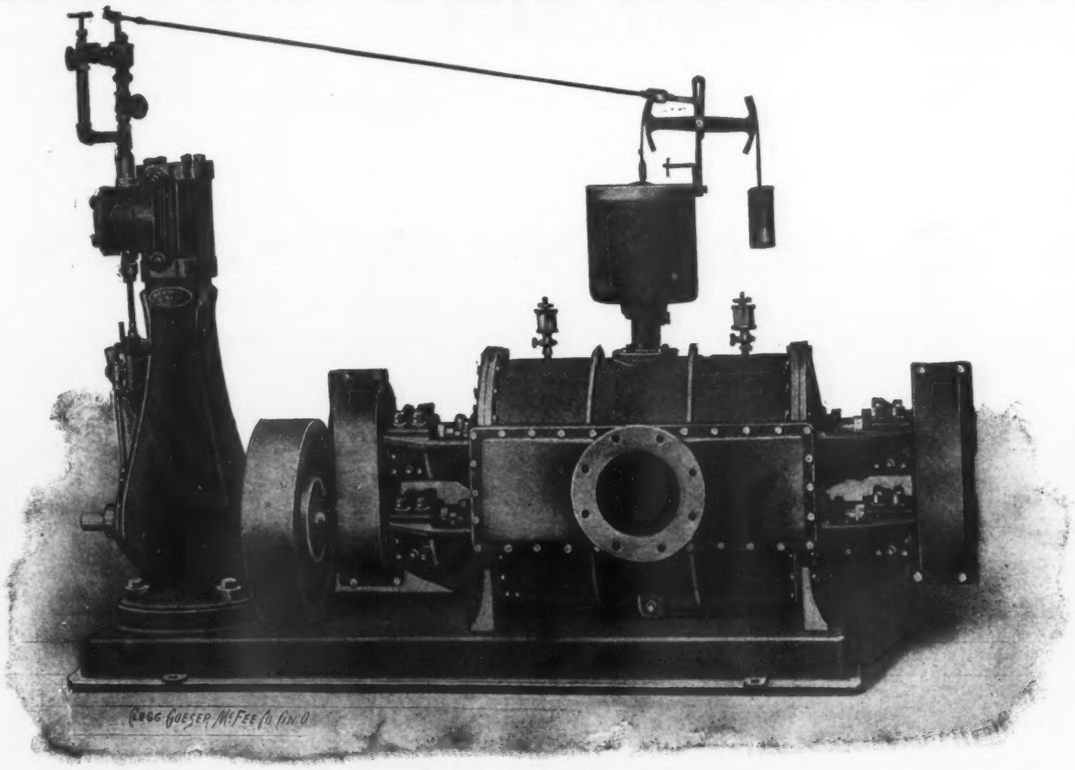

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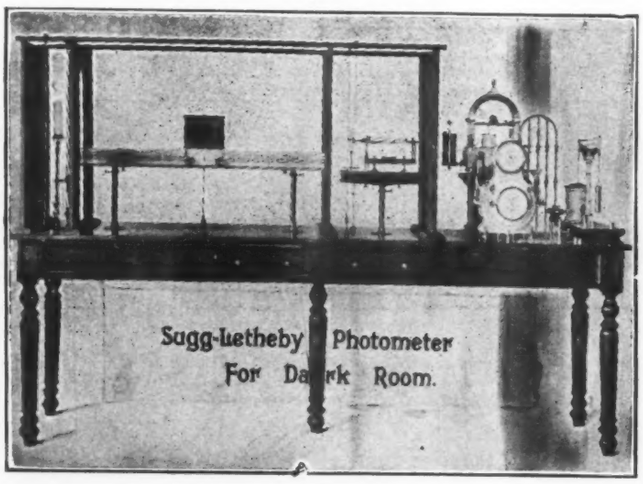
Table No. 1.
FOLLOWING THE MOON.

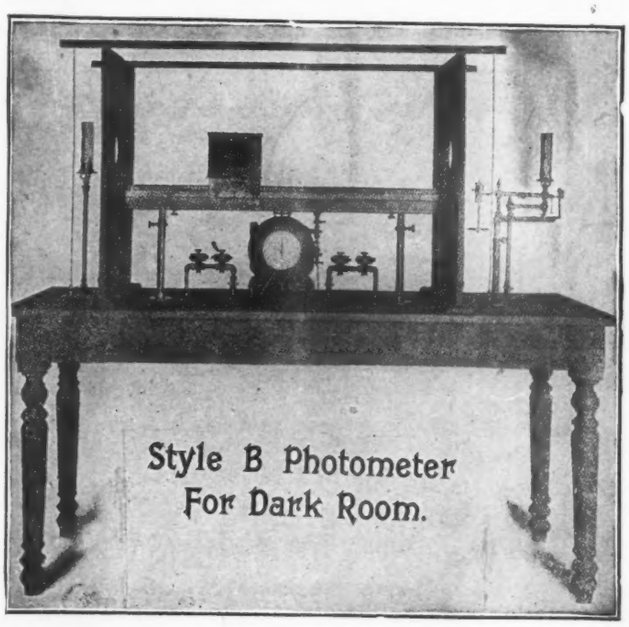
Day of Week.	Date.	Light.	Extinguish.
Mon.	1	5.30PM	9.00PM
Tue.	2	5.30	10.00
Wed.	3	5.30	11.00
Thu.	4	5.30LQ	12.10AM
Fri.	5	5.30	1.10
Sat.	6	5.30	2.10
Sun.	7	5.20	3.10
Mon.	8	5.20	4.10
Tue.	9	5.20	5.40
Wed.	10	5.20	5.40
Thu.	11	5.20	5.40
Fri.	12	5.20NM	5.40
Sat.	13	5.20	5.40
Sun.	14	5.10	5.50
Mon.	15	5.10	5.50
Tue.	16	5.10	5.50
Wed.	17	7.20	5.50
Thu.	18	8.20	5.50
Fri.	19	9.30	5.50
Sat.	20	10.40FQ	5.50
Sun.	21	11.50	5.50
Mon.	22	1.10AM	5.50
Tue.	23	2.20	5.50
Wed.	24	3.30	5.50
Thu.	25	No L.	No L.
Fri.	26	No L. FM	No L.
Sat.	27	No L.	No L.
Sun.	28	5.10PM	6.50PM
Mon.	29	5.10	7.40
Tue.	30	5.10	8.40

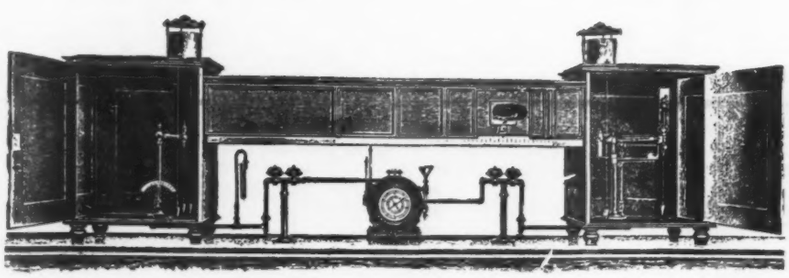
TOTAL HOURS DURING 1909.

By Table No. 1.

	Hrs.Min.
January	212.20
February	183.40
March	173.00
April	151.10
May	144.10
June	138.50
July	145.40
August	160.30
September	180.00
October	201.00
November	216.30
December	233.40
Total, yr.	2140.30







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PUBLIC LIGHTING TABLE.

NOVEMBER, 1909.

Table No. 2.
NEW YORK CITY.
ALL NIGHT LIGHTING.

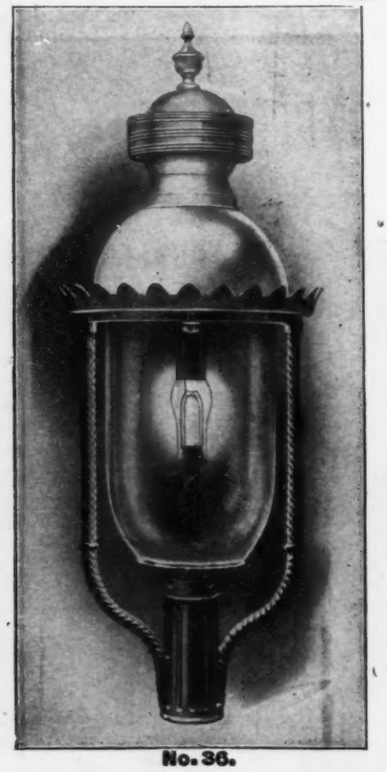
Day of Week.	Date.	Complete Lighting in One Hour From Time Given P. M.	Complete Extinguishing in 50 Minutes From Time Given A. M.
Mon.	1	4.37	5.17
Tue.	2	4.37	5.17
Wed.	3	4.37	5.17
Thu.	4	4.37	5.17
Fri.	5	4.27	5.27
Sat.	6	4.27	5.27
Sun.	7	4.27	5.27
Mon.	8	4.27	5.27
Tue.	9	4.27	5.27
Wed.	10	4.27	5.27
Thu.	11	4.27	5.27
Fri.	12	4.17	5.32
Sat.	13	4.17	5.32
Sun.	14	4.17	5.32
Mon.	15	4.17	5.32
Tue.	16	4.17	5.32
Wed.	17	4.17	5.32
Thu.	18	4.17	5.32
Fri.	19	4.12	5.42
Sat.	20	4.12	5.42
Sun.	21	4.12	5.42
Mon.	22	4.12	5.42
Tue.	23	4.12	5.42
Wed.	24	4.12	5.42
Thu.	25	4.12	5.42
Fri.	26	4.07	5.52
Sat.	27	4.07	5.52
Sun.	28	4.07	5.52
Mon.	29	4.07	5.52
Tue.	30	4.07	5.52

TOTAL HOURS DURING 1909.

	Hrs.Min.
January	428.30
February	358.15
March	353.10
April	298.10
May	263.20
June	234.45
July	248.30
August	278.00
September	311.25
October	370.05
November	397.40
December	438.35
	3980.25
Deduct on account of 50 min. extinguishing time	30.25
Total, yr.	3950.00

NEW YORK, 318 West 42d Street.
BOSTON, 820 Beacon Building.
PHILADELPHIA, Broad and Arch Streets.
ST. LOUIS, 712 Roe Building.
CHICAGO, 218 La Salle Street.
SAN FRANCISCO, 512 Oak Street.

WELSBACH STREET LIGHTING COMPANY



No. 36.

....OF AMERICA....

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Which includes its specially DESIGNED and PATENTED BURNER for PARK LIGHTING exclusively.

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By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

POINTS OF MERIT:

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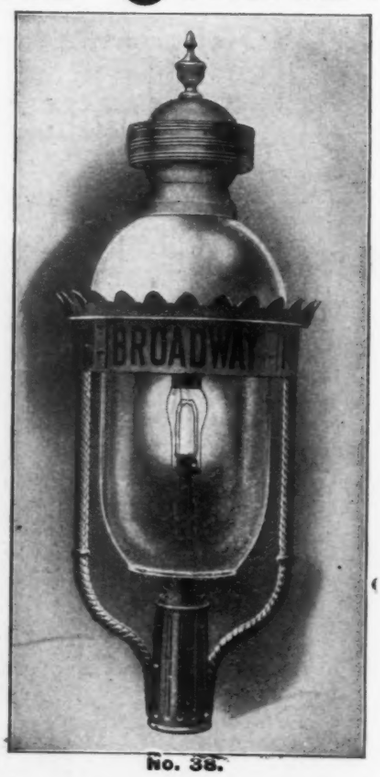
Correspondence Solicited from Gas Companies and Others interested in Municipal and Outside Lighting.



No. 38.

Welsbach Inverted Portico Lamps

No. 901. INVERTED PORTICO LAMP. Single Burner.

For all semi-exposed places—porticos, entrances, etc. Simple in construction, few parts; exterior made of enameled steel, interior parts of heat-resisting material that are practically indestructible. Wind, storm and insect proof.

The globes on designs No. 901 and No. 902 are supported in a flanged reflector that provides for heat expansion. The reflector being hinged, it can readily be lowered for cleaning or trimming the lamp.

Gas and pilot-flame adjustment by means of needle valves from outside of lamp. The pilot-flame is protected and will not blow out.

Three Styles from which to Choose:

No. 902.

Equipped with No. 5 clear globe and steel enameled reflector 8¾ inches in diameter and 1½ inches deep. Finish, dark green enamel.

Dimensions: Length over all, 16 inches; diameter of globe, 5 inches; depth of globe, 4 inches. List price, complete, without mantles... $8.00

No. 900.

Equipped with 7-inch alabaster or sand-blast ball globe. Finish, dark green, or white and gold enamel. Dimensions: Length over all, 17½ inches.

White and gold enamel. List price, without mantles. $9.00

Dark green enamel. List price, without mantles. $8.00

No. 901.

Same as 902 portico lamp, except steel enameled reflector, which is flat, and 10 inches in diameter.

List price, complete, without mantles. $8.00

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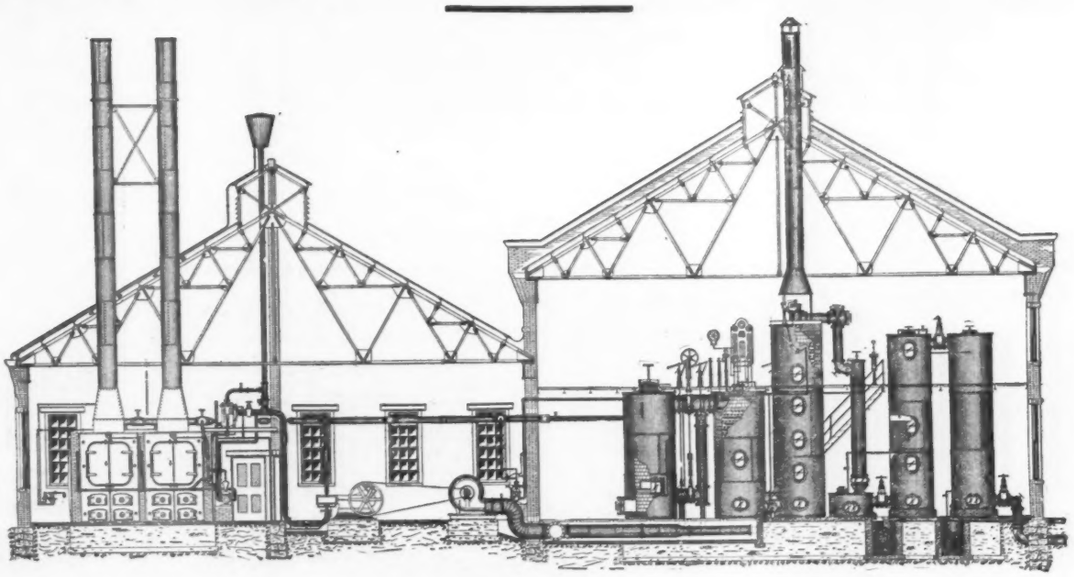

TOTAL SETS INSTALLED TO JULY 1, 1909, ... 704
TOTAL DAILY CAPACITY TO JULY 1, 1909, ... 577,440,000 cu. ft.

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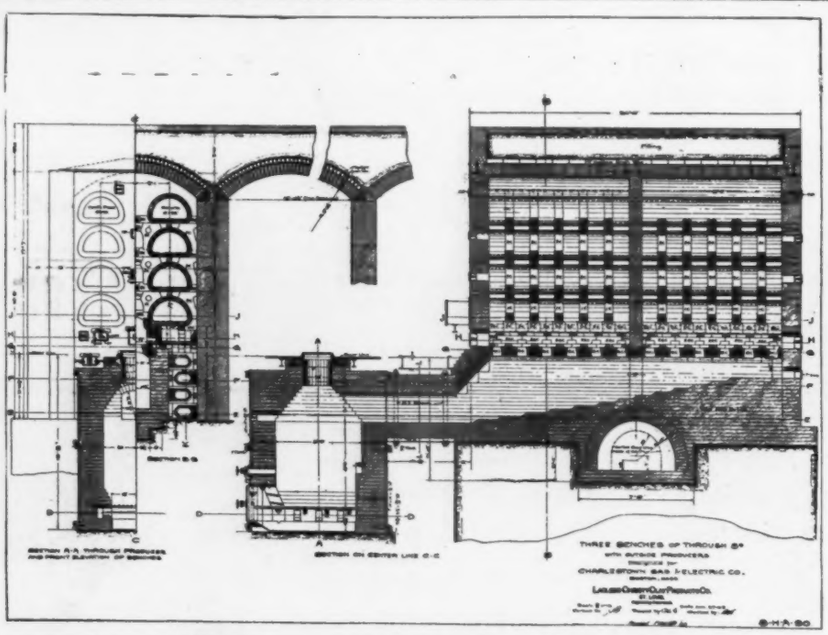

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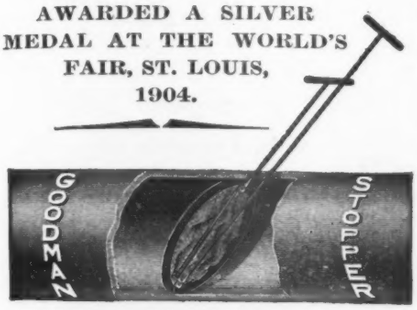

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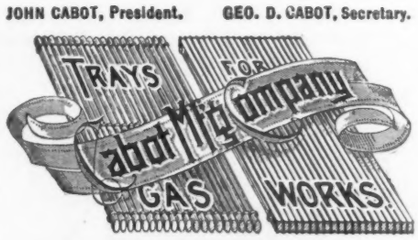

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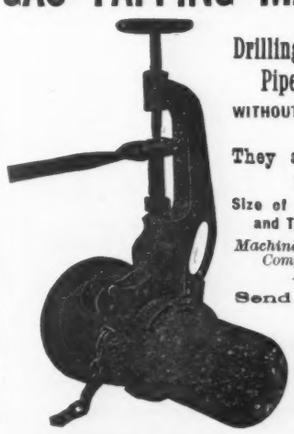

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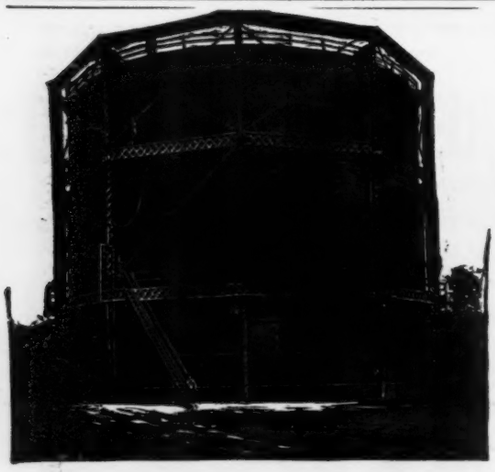

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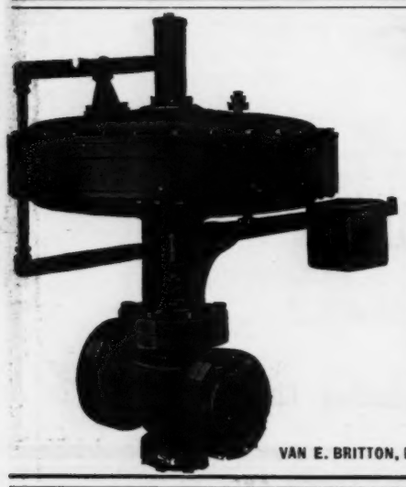

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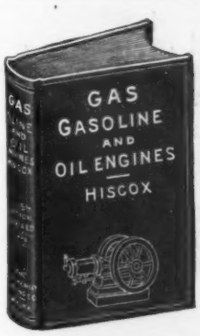

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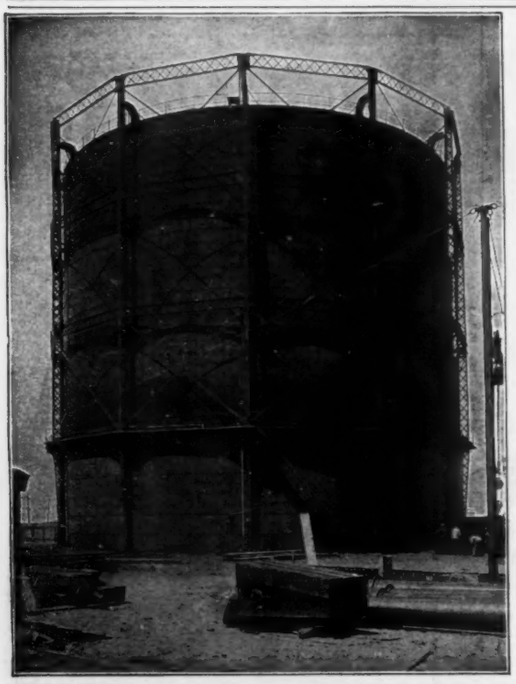

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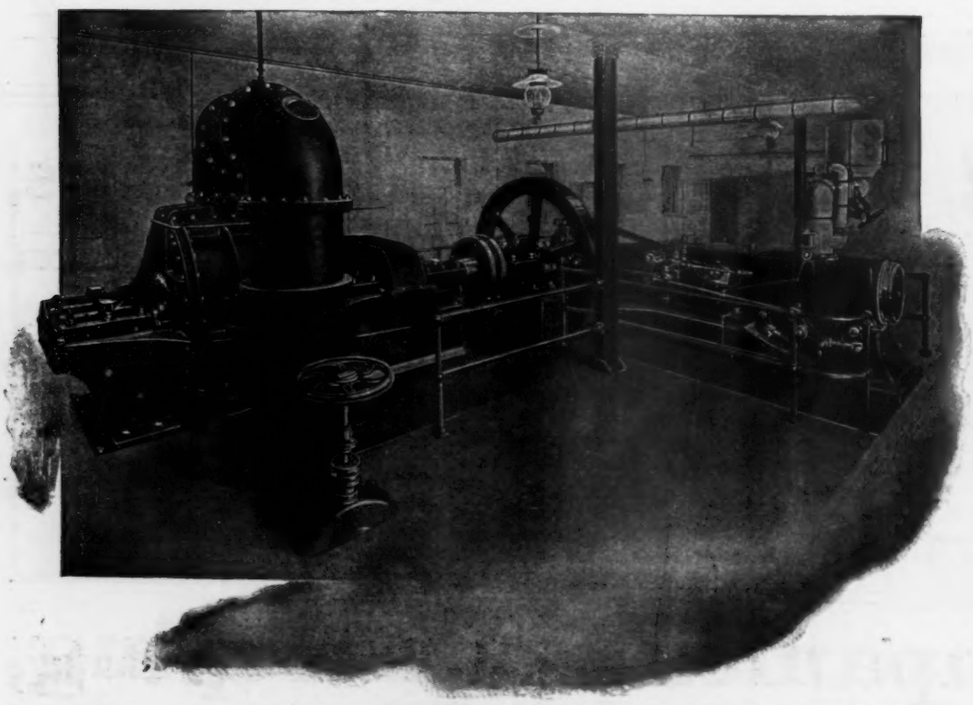

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